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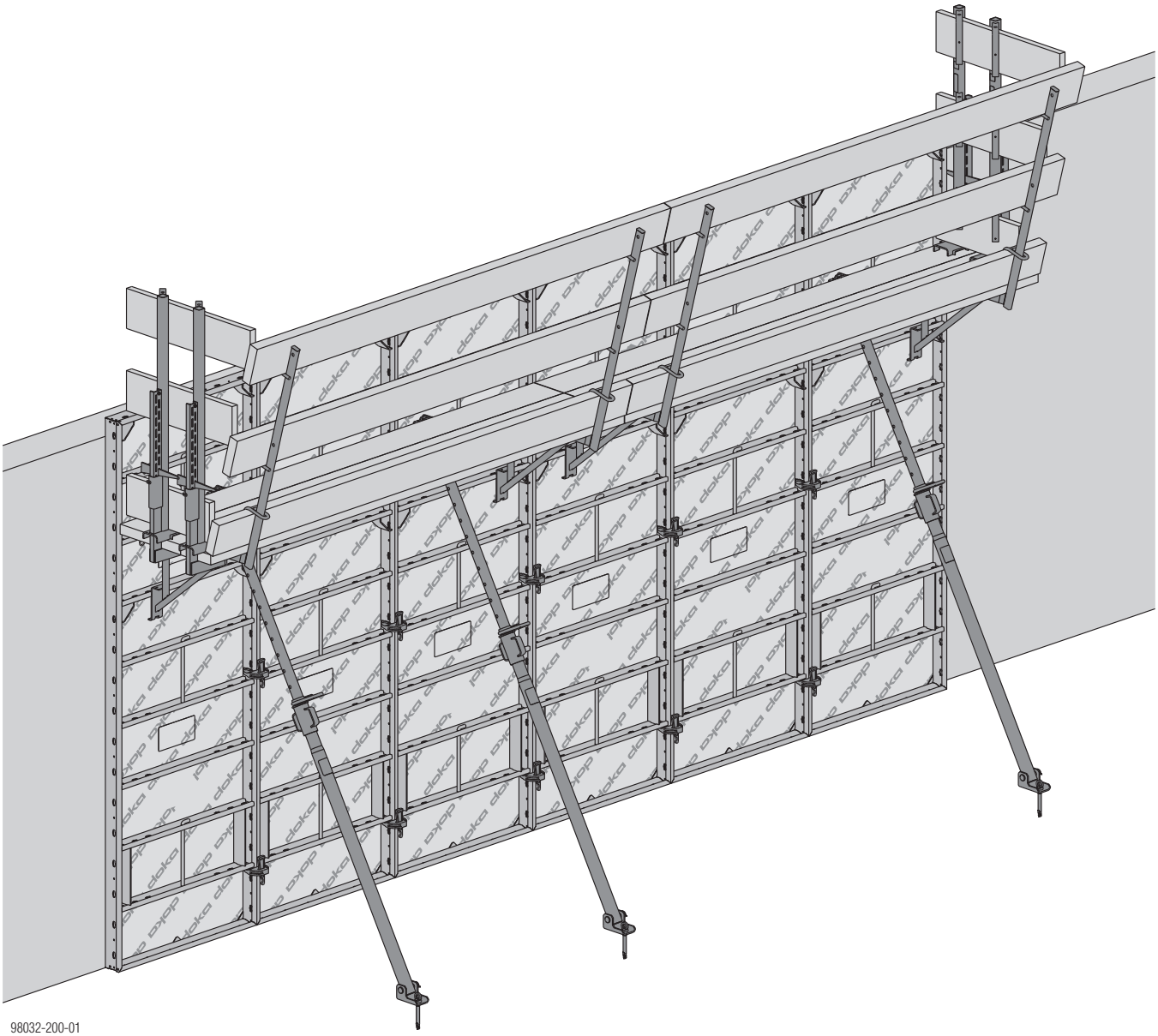
Method statement

Framed formwork Frami S Xlife



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doka

The Formwork Experts

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Basic safety warnings

User target groups

- This User Information booklet (Method Statement) is aimed at everyone who will be working with the Doka product or system it describes. It contains information on the standard design for setting up this system, and on correct, compliant utilization of the system.
- All persons working with the product described herein must be familiar with the contents of this manual and with all the safety instructions it contains.
- Persons who are incapable of reading and understanding this booklet, or who can do so only with difficulty, must be instructed and trained by the customer.
- The customer is to insure that the information materials provided by Doka (e.g. User Information booklets, Method Statements, Operating Instruction manuals, plans etc.) are available to all users, and that they have been made aware of them and have easy access to them at the usage location.
- In the relevant technical documentation and formwork utilization plans, Doka shows the workplace safety precautions that are necessary in order to use the Doka products safely in the usage situations shown.
  In all cases, users are obliged to insure compliance with national OH&S (occupational health and safety) rules throughout the entire project and to take appropriate additional or alternative workplace safety precautions where necessary.

Hazard assessment

- The customer is responsible for drawing up, documenting, implementing and continually updating a hazard assessment at every job-site.
  This document serves as the basis for the site-specific hazard assessment, and for the instructions given to users on how to prepare and utilize the system. It does not substitute for these, however.

Remarks on this document

- This User Information booklet can also be used as a generic method statement or incorporated with a site-specific method statement.
- **Many of the illustrations in this booklet show the situation during formwork assembly and are therefore not always complete from the safety point of view.**
- **Further safety instructions, especially warnings, will be found in the individual sections of this document!**

Planning

- Provide safe workplaces for those using the formwork (e.g. for when it is being erected/dismantled, modified or repositioned etc). It must be possible to get to and from these workplaces via safe access routes!
- **If you are considering any deviation from the details and instructions given in this booklet, or any application which goes beyond those described in the booklet, then revised static calculations must be produced for checking, as well as supplementary assembly instructions.**

Rules applying during all phases of the assignment:

- The customer must ensure that this product is erected and dismantled, reset and generally used for its intended purpose under the direction and supervision of suitably skilled persons with the authority to issue instructions.
  These persons' mental and physical capacity must not in any way be impaired by alcohol, medicines or drugs.
- Doka products are technical working appliances which are intended for industrial/commercial use only, always in accordance with the respective Doka User Information booklets or other technical documentation authored by Doka.
- The stability of all components and units must be ensured during all phases of the construction work!
- The functional/technical instructions, safety warnings and loading data must all be strictly observed and complied with. Failure to do so can cause accidents and severe (even life-threatening) damage to health, as well as very great material damage.
- Fire-sources are not permitted anywhere near the formwork. Heating appliances are only allowed if properly and expertly used, and set up a safe distance away from the formwork.
- The work must take account of the weather conditions (e.g. risk of slippage). In extreme weather, steps must be taken in good time to safeguard the equipment, and the areas immediately around the equipment, and to protect employees.
- All connections must be checked regularly to ensure that they still fit properly and are functioning correctly.
  It is very important to check all screw-type connections and wedge-clamped joins whenever the construction operations require (particularly after exceptional events such as storms), and to tighten them if necessary.

Assembly

- The equipment/system must be inspected by the customer before use, to ensure that it is in suitable condition. Steps must be taken to rule out the use of any components that are damaged, deformed, or weakened due to wear, corrosion or rot.
- Combining our formwork systems with those of other manufacturers could be dangerous, risking damage to both health and property. If you intend to combine different systems, please contact Doka for advice first.
- The assembly work must be carried out by suitably qualified employees of the client's.
- It is not permitted to modify Doka products; any such modifications constitute a safety risk.

Erecting the formwork

- Doka products and systems must be set up in such a way that all loads acting upon them are safely transferred!

Pouring

- Do not exceed the permitted fresh-concrete pressures. Excessively high pouring rates lead to formwork overload, cause greater deflection and risk causing breakage.

Stripping the formwork

- Do not strip the formwork until the concrete has reached sufficient strength and the person in charge has given the order for the formwork to be stripped!
- When stripping the formwork, never use the crane to break concrete cohesion. Use suitable tools such as timber wedges, special pry-bars or system features such as Framax S bias-cut corners.
- When stripping the formwork, do not endanger the stability of any part of the structure, or of any scaffolding, platforms or formwork that is still in place!

Transporting, stacking and storing

- Observe all regulations applying to the handling of formwork and scaffolding. In addition, the Doka lifting equipment must be used - this is a mandatory requirement.
- Remove any loose parts or fix them in place so that they cannot be dislodged or fall free!
- All components must be stored safely, following all the Doka instructions given in the relevant sections of this User Information booklet!

Regulations; occupational health & safety

- Always follow all federal, state and local safety regulations and other safety rules applying to the use of our products.

Instruction as required by EN 13374:

- If a person or object falls against, or into, the side-guard system and/or any of its accessories, the side-guard component affected may only continue in use after it has been inspected and passed by an expert.

Maintenance

- Only original Doka components may be used as spare parts.

Symbols

The following symbols are used in this booklet:

Important note
Failure to observe this may lead to malfunction or damage.

CAUTION / WARNING / DANGER
Failure to observe this may lead to material damage, and to injury to health which may range up to the severe or even life-threatening.

Instruction
This symbol indicates that actions need to be taken by the user.

Sight-check
Indicates that you need to do a sight-check to make sure that necessary actions have been carried out.

Tip
Points out useful practical tips.

Reference
Refers to other documents and materials.

Miscellaneous

We reserve the right to make alterations in the interests of technical progress.

Doka framed formwork Frami Xlife

Frami Xlife is ideal for fast, cost-saving forming both with and without a crane.

Saves time, cuts labor costs

with its system logic, ease of cleaning and low form-tie ratio

Frami Xlife has several features that make it extremely cost-efficient:

- its Xlife sheet is easier and quicker to clean
- it has a low form-tie ratio, which cuts costs
- it is quicker to reposition, as there is a clearly defined grid for the gang-forms
- shorter forming-times, as the system minimizes any filler zones

High economy, maximum lifespan

due to the Xlife sheet and galvanized hollow-section steel frames

The high product quality

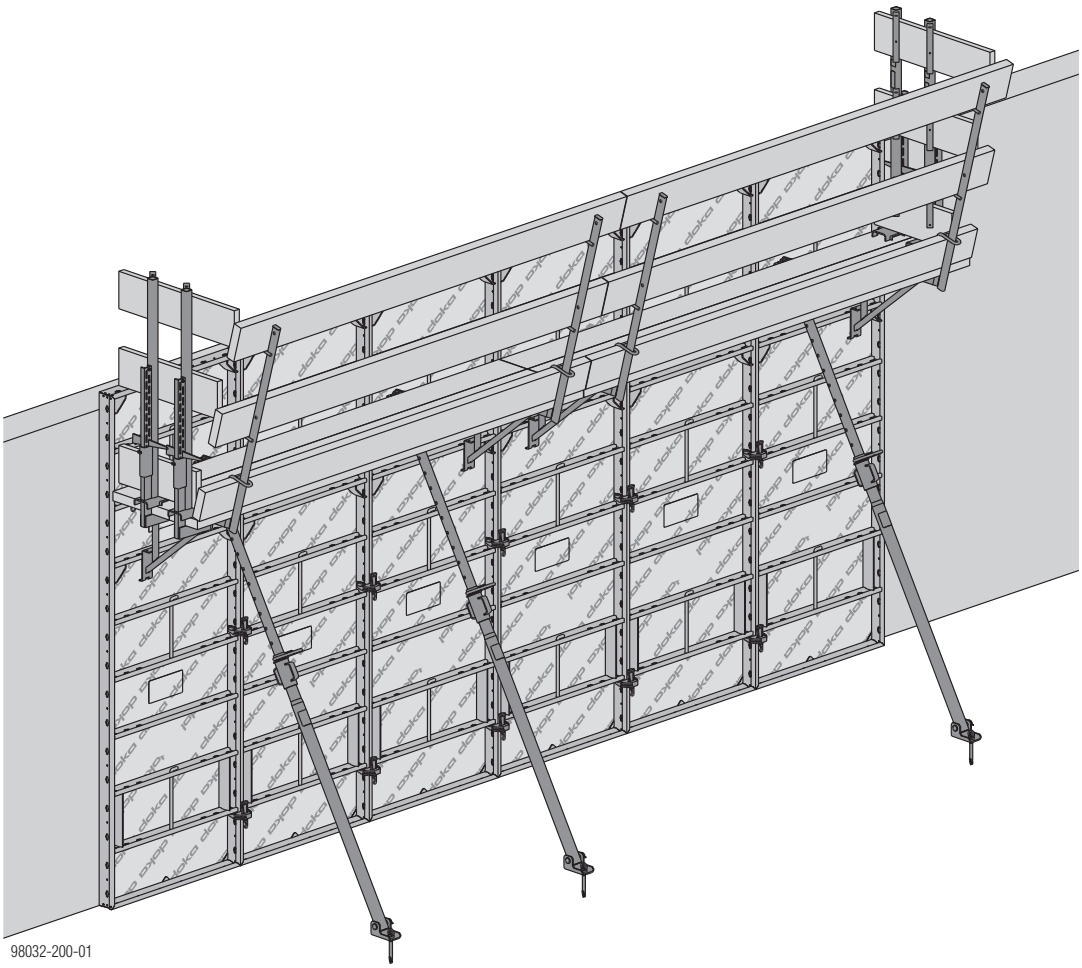
- lowers close-out and rehabilitation costs
- ensures that the formwork system will have a long service life

Simplifies planning and handling

as the system can be used in so many different ways

The ingenious Frami Xlife formwork system gives you

- huge flexibility, because you can combine panel heights from 3’-0" to 9’-0"
- an efficient way of forming shafts, when combined with the Framax bias cut corner I
- rapid formwork planning using the professional Tipos-Doka software
- cost savings from reduced commissioning quantities



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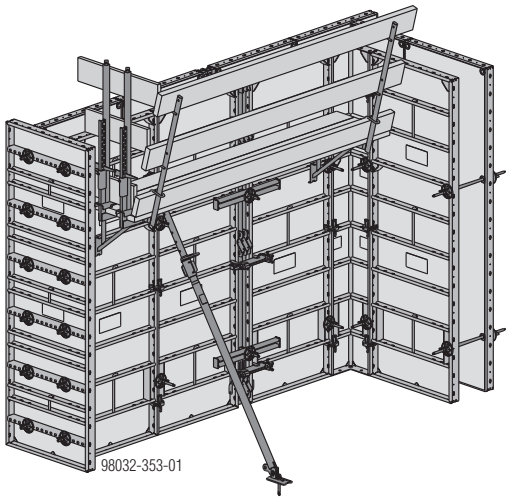
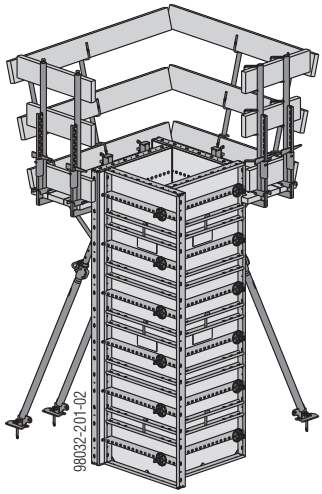
Areas of use

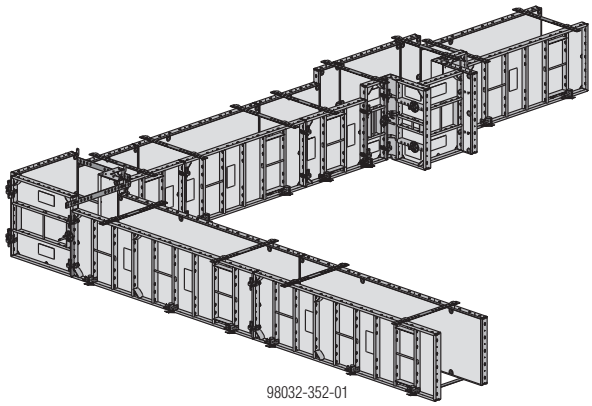
Wall formwork

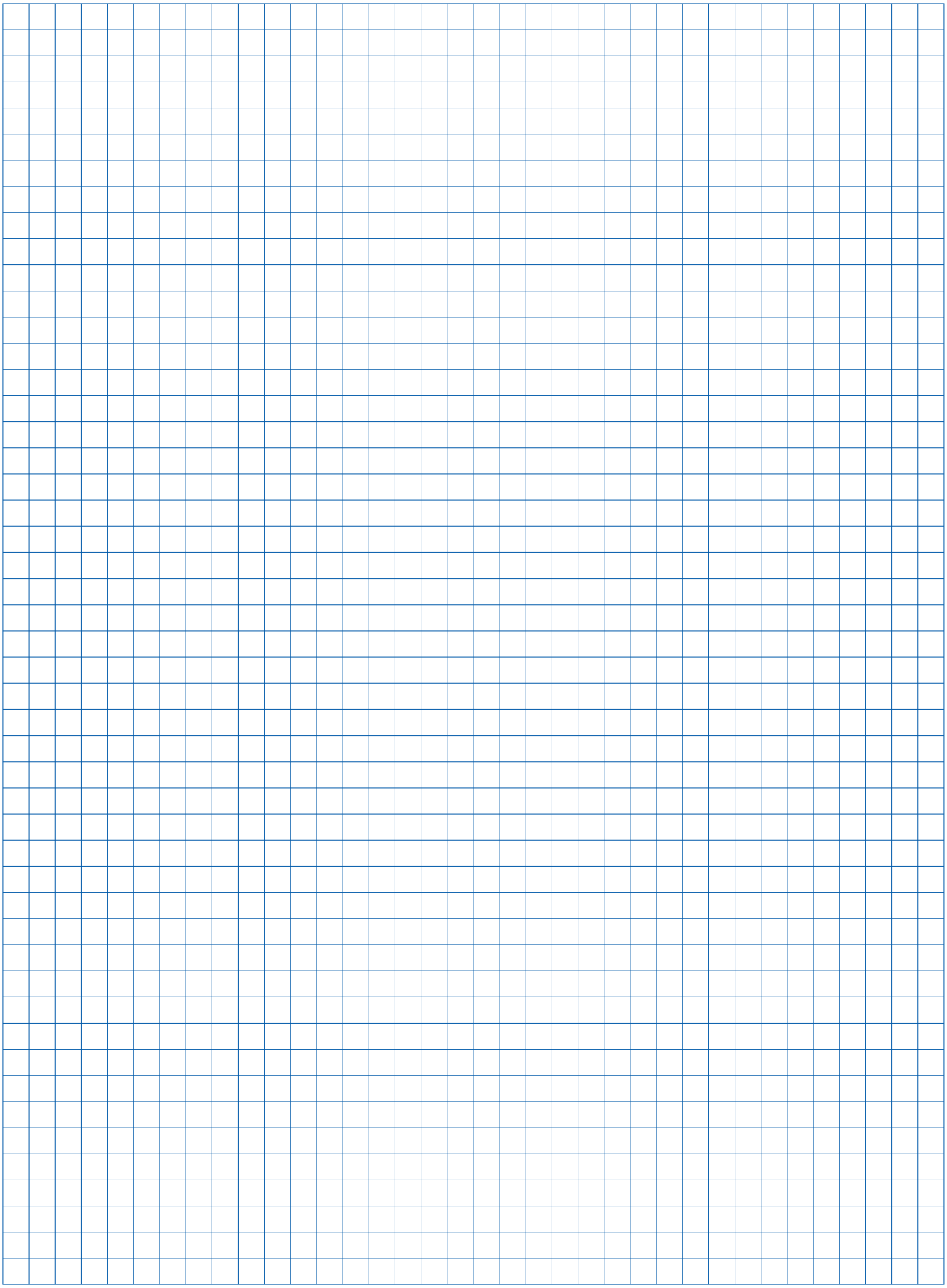


Column formwork

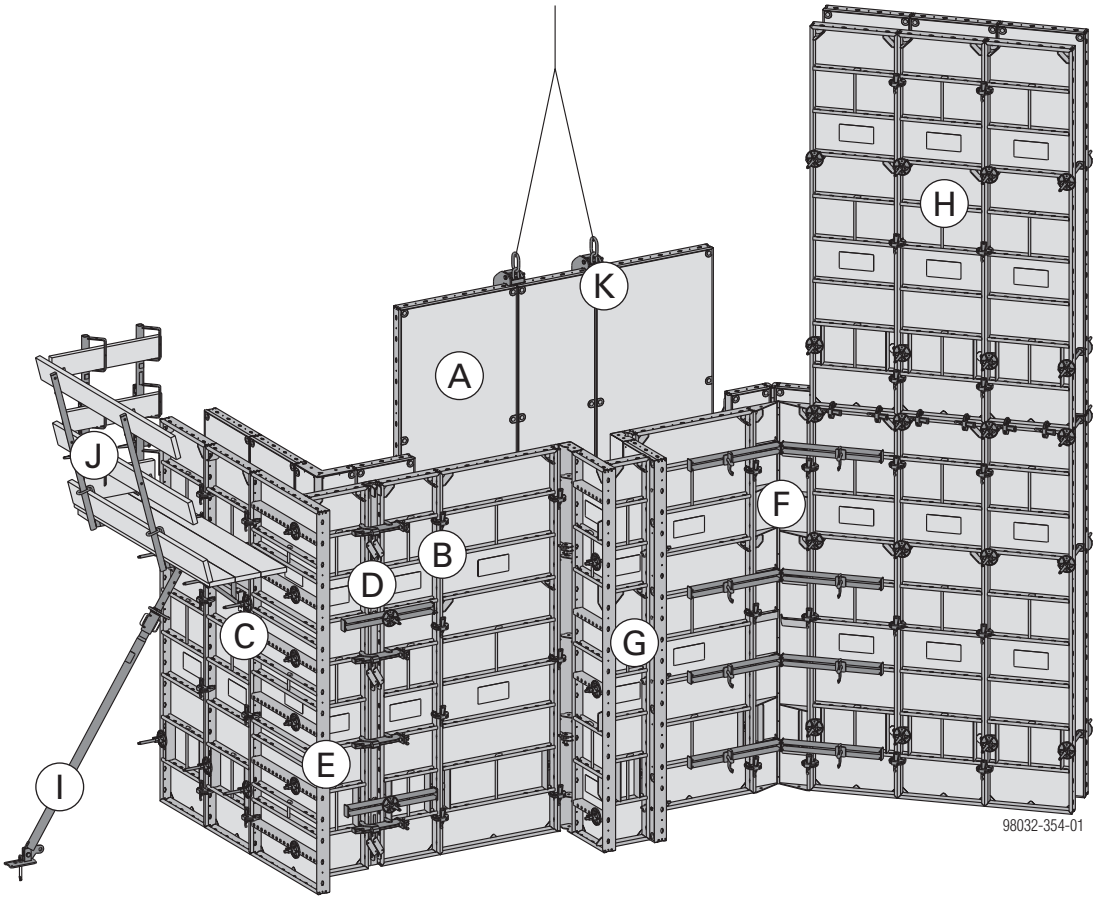


Footing and grade beam formwork





Forming walls with Frami Xlife



A Frami panel (Page 16)
B Joining gangs (Page 24)
C Tie-rod system (Page 26)
D Length adjustment (Page 29)
E 90 degree corners (Page 36)
F Acute and obtuse-angled corners (Page 42)
G Bulkhead formwork (Page 50)
H Vertical stacking of panels (Page 54)
I Plumbing accessories (Page 60)
J Pouring platforms (Page 64)
K Resetting by crane (Page 66)

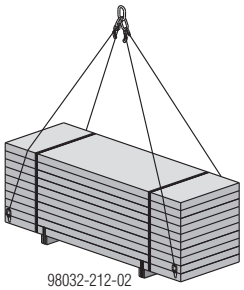
Method statement

Using Frami as a manhandled formwork

The sequence shown here is based on a straight wall. As a rule, formwork set-up should start in a corner, working outward.

Transporting / handling the panels

➤ For offloading panels from a truck, or lifting them on-site a stack at a time, use the Frami transport hook 2.5kN and the Doka 4-part chain 3.20m (see "Transporting, stacking and storing").



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Erecting the formwork

➤ Spray the plywood face with release agent (see "Cleaning and care").

WARNING

➤ The Frami panels must be securely braced in every phase of the construction work!

➤ Fix the first panel to the ground with a panel strut (see "Plumbing accessories").
This stabilizes the panel so that it cannot fall over.

➤ Use the nail-holes to fasten the panels to the ground or sills.

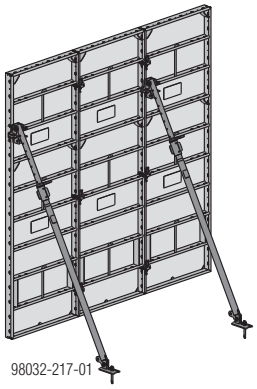
CAUTION

Never use a sledge-hammer to plumb and align the panels!

This would damage the profiles of the panels.

➤ Use only proper plumbing tools (e.g. a special pry-bar) that cannot cause any damage.

➤ Continue lining up panels in this way, clamp them together (see "Inter-panel connections") and attach panel struts.



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The gang can now be exactly plumbed and aligned.

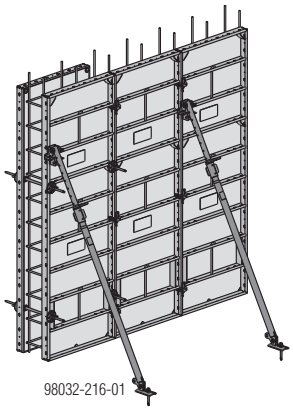
Erecting the opposing formwork

Once the reinforcement has been placed, the formwork can be closed.

➤ Spray the formwork sheet of the opposing formwork with release agent.

➤ Stand up the first panel of the opposing formwork.

➤ Insert the form-ties (see "Form-tie system"). Now the opposing formwork is also secured against falling over.



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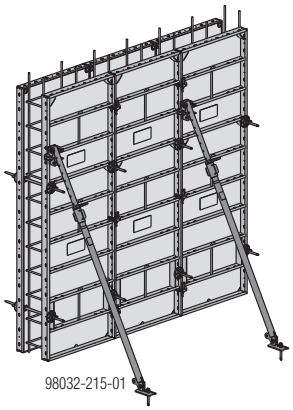
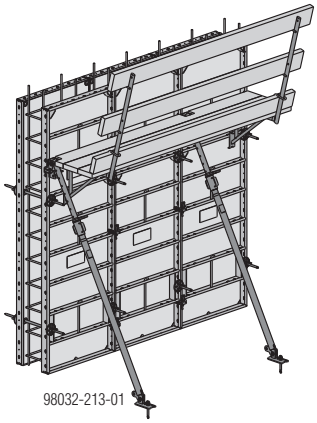
➤ In the same way, continue lining up panels, clamping them together and fitting form-ties.



➤ Mount the pouring platform and attach end-of-platform sideguards where necessary (see "Pouring platforms with single brackets").



Pouring

Permitted pressure of the fresh concrete:
See the section headed "Permissible fresh-concrete pressure".

Observe the following **guidelines**:

- Doka Calculation Guide, section headed "Concrete pressure on perpendicular formwork to DIN 18218"
- ACI 301 - "Specifications for Structural Concrete"
- ACI 309 - "Guide for Consolidation of Concrete"
- ACI 347 - "Guide to Formwork for Concrete"
- SP4 - "Formwork for Concrete"
- CAN/CSA S269.3 - "Concrete Formwork"

➤ Do not exceed the maximum permissible rate of placing.

➤ Pour the concrete.

➤ Make only moderate use of vibrators, carefully coordinating the times and locations of vibrator use.

Stripping

➤ Observe the stipulated stripping times.

➤ Remove the pouring platform.

➤ Beginning with the unbraced formwork side, take down the panels one-by-one - take out the form-ties and undo the connectors to the adjacent panel.

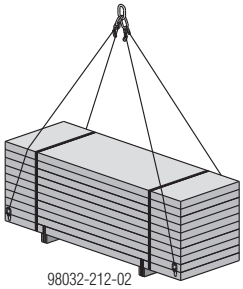
➤ Lift the panel away and clean concrete residue off the formwork sheet (see "Cleaning and care").

Using Frami as a crane-handled formwork

The sequence shown here is based on a straight wall. As a rule, formwork set-up should start in a corner, working outward.

Transporting / handling the panels

➤ For offloading panels from a truck, or lifting them on-site a stack at a time, use the Frami transport hook 2.5kN and the Doka 4-part chain 3.20m (see "Transporting, stacking and storing").



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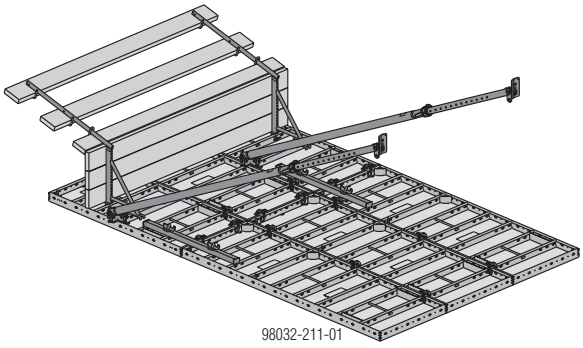
Pre-assembly

➤ Pre-assemble gang-forms face-down on an assembly bench (see "Inter-panel connections").

➤ Mount the pouring platform and attach end-of-platform sideguards where necessary (see "Pouring platforms with single brackets").

➤ With the gang-form still flat, mount panel struts to it (see "Plumbing accessories").



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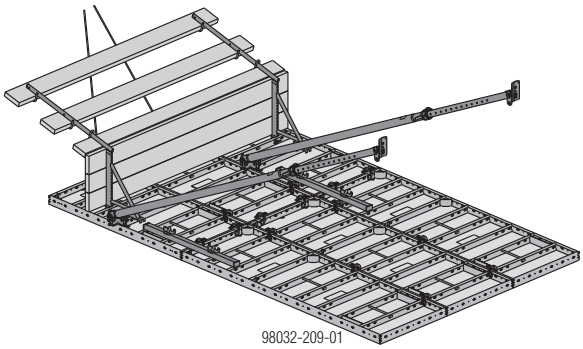
Erecting the formwork

➤ Attach the crane suspension tackle to the Frami lifting hook (see "Resetting by crane" and the Operating Instructions for the "Frami lifting hook").

Max. load:

1100 lbs (500 kg) per Frami lifting hook

Area of formwork that can be lifted with 2 lifting hooks: approx. 270 sq.ft. (25 m²)



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➤ Pick up the gang-form by crane.

➤ Spray the plywood face with release agent (see "Cleaning and care").

WARNING

➤ Do not allow people to ride on the formwork or platform.

Important note:

➤ Guiding the gang should be done with taglines that are long enough to keep the person who is doing the guiding out of the way of the gang.

➤ Fly the gang-form to its new location.

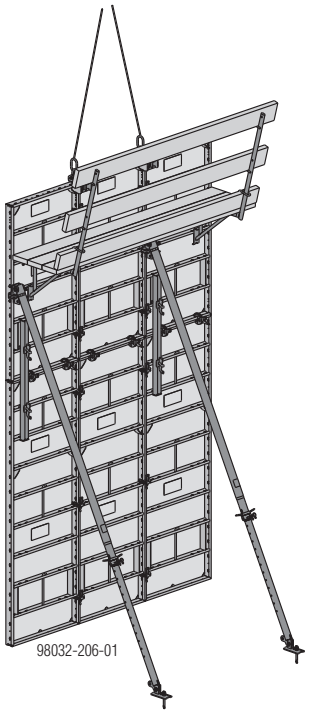
CAUTION

Never use a sledge-hammer to plumb and align the panels!

This would damage the profiles of the panels.

➤ Use only proper plumbing tools (e.g. a special pry-bar) that cannot cause any damage.

➤ Fix the panel struts firmly to the ground (see "Plumbing accessories").

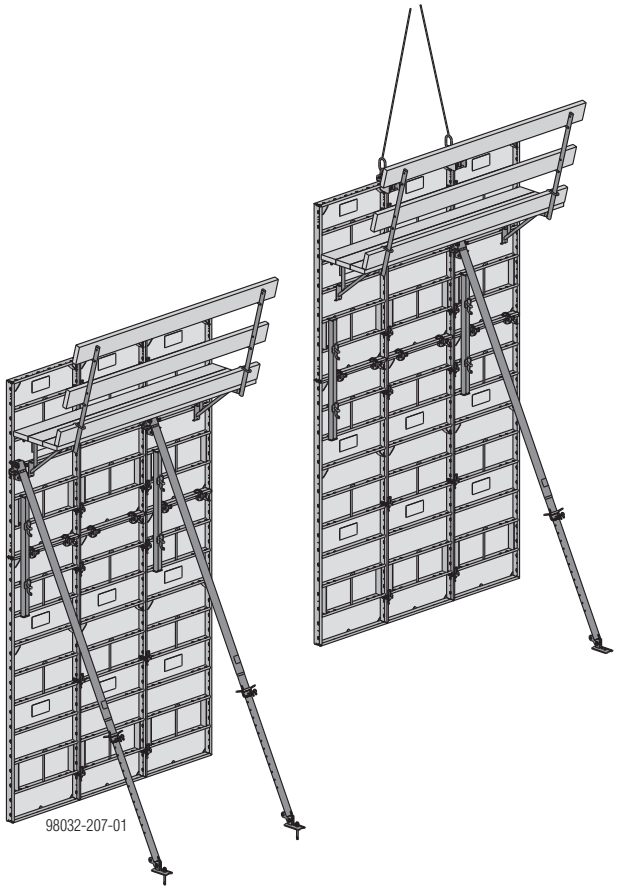


The gang-form is now stable and can be plumbed and aligned exactly, with no need for the crane.

➤ Detach the gang-form from the crane.

➤ Use the nail-holes to fasten the panels to the ground or sills.

➤ Continue lining up adjacent gang-forms in this way, and clamp them together (see "Inter-panel connections").

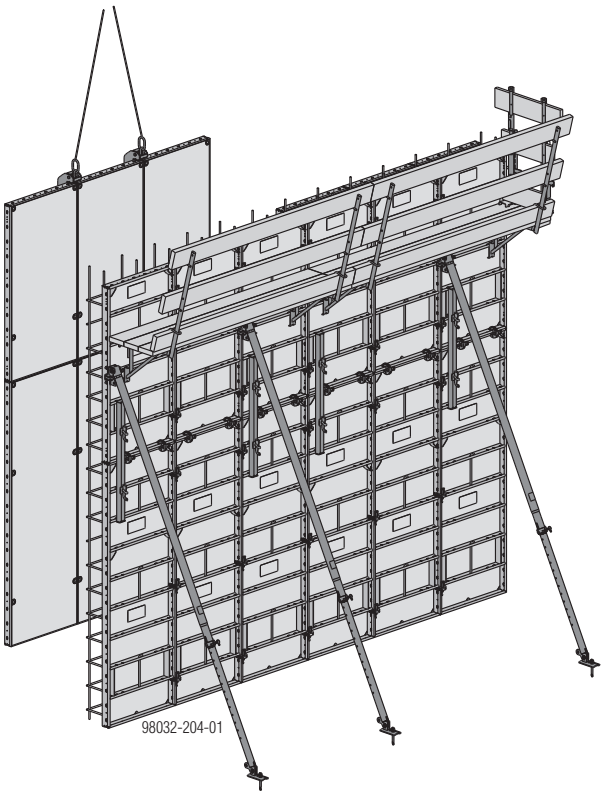


Erecting the opposing formwork

Once the reinforcement has been placed, the formwork can be closed.

➤ Spray the plywood face with release agent (see "Cleaning and care").

➤ Fly the opposing formwork by crane to its next location.



➤ Insert the form-ties (see "Form-tie system").

Before disconnecting from the crane:

➤ If there are no panel struts on the opposing formwork, do not disconnect the gang from the crane until a large enough number of form-ties have been installed to keep it safely in an upright position.

➤ Detach the gang-form from the crane (wherever possible, operate the lifting hook from the opposite pouring platform).

➤ Continue lining up adjacent gang-forms in this way, and clamp them together (see "Inter-panel connections").

Pouring

Permitted pressure of the fresh concrete:

See the section headed "Permissible fresh-concrete pressure".

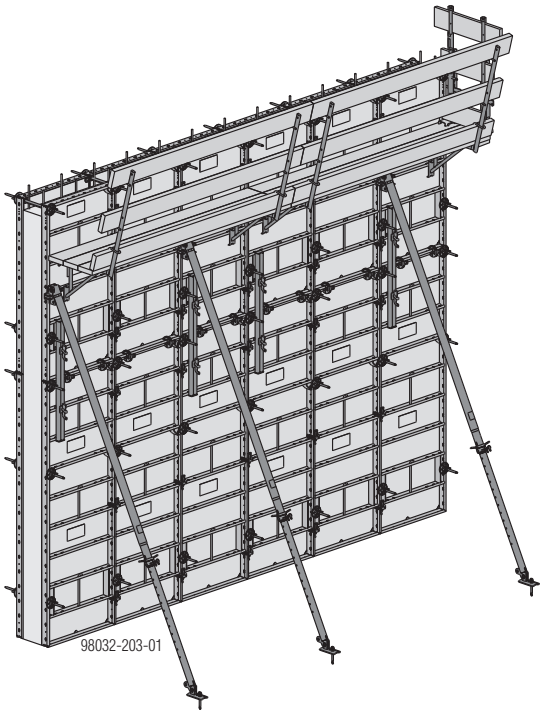
Observe the following **guidelines**:

- Doka Calculation Guide, section headed "Concrete pressure on perpendicular formwork to DIN 18218"
- ACI 301 - "Specifications for Structural Concrete"
- ACI 309 - "Guide for Consolidation of Concrete"
- ACI 347 - "Guide to Formwork for Concrete"
- SP4 - "Formwork for Concrete"
- CAN/CSA S269.3 - "Concrete Formwork"

➤ Do not exceed the maximum permissible rate of placing.

➤ Pour the concrete.

➤ Make only moderate use of vibrators, carefully coordinating the times and locations of vibrator use.



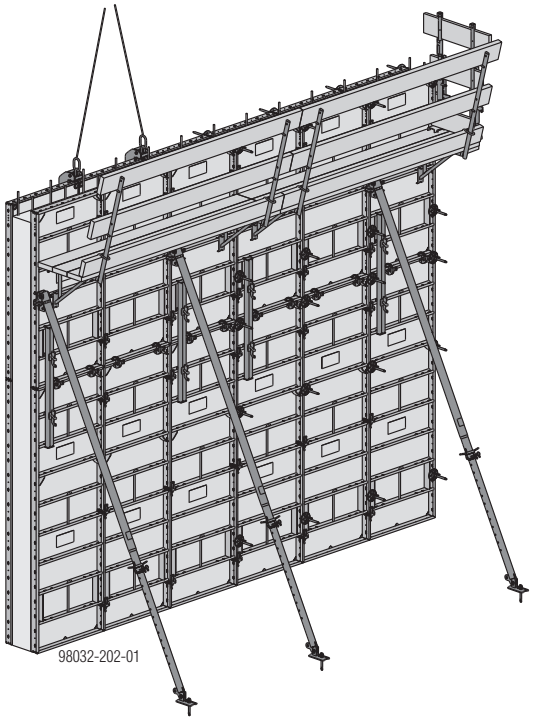
Stripping

➤ Observe the stipulated stripping times.

➤ Remove any loose items from the formwork and pouring platform, or secure them firmly.

➤ Attach the gang-form of the unbraced formwork side to the crane (wherever possible, operate the lifting hook from the opposite pouring platform).

➤ Take out the form-ties and undo the connectors to the adjacent panels.



In order to speed up operations when repositioning by crane, most of the form-ties can be taken out in advance.

Warning!
However, there must be at least as many form-ties left in place as are needed to keep the gang safely in an upright position.

WARNING
The formwork tends to adhere to the concrete. When stripping the formwork, do not try to break concrete cohesion using the crane!

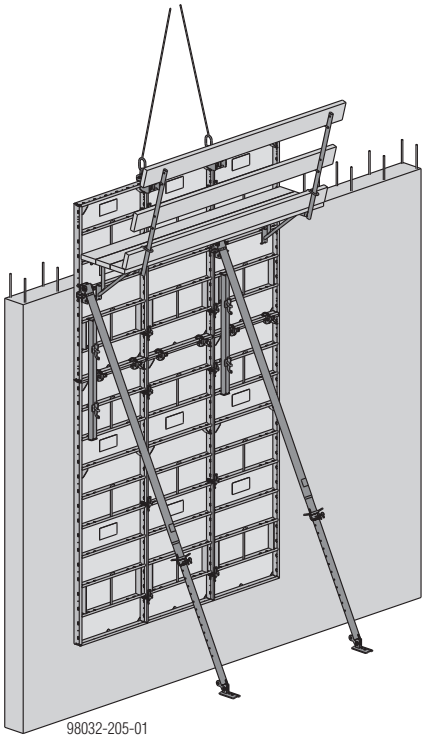
Risk of crane overload.

➤ Use suitable tools such as timber wedges or a special pry-bar to detach the formwork from the concrete.

➤ Pick up the gang-form and fly it to its next location.
If the gang-form is "parked" in the upright prior to its next use, it must have sufficient stability (see "Plumbing accessories").
Gang-forms with only one panel strut must not be "parked" upright, but placed face-down.

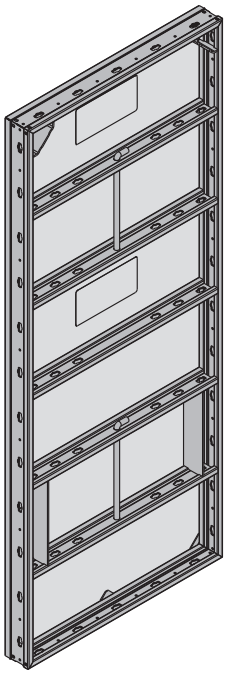
➤ Clean residual concrete off the formwork sheet (see "Cleaning and care").

➤ Where the gang-form has panel struts and a pouring platform attached to it, first attach this gang-form to the crane, and only then detach the floor anchorages of the panel struts.

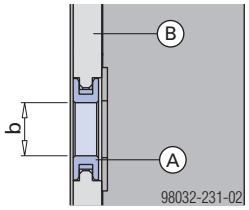


The Frami panel in detail

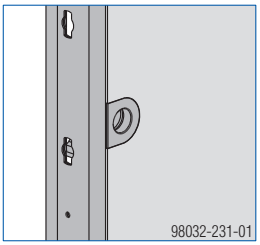
High load-bearing capacity



Tie-hole



b ... Diameter 1 1/8" (28 mm)



A Form-tie protector
B Xlife sheet

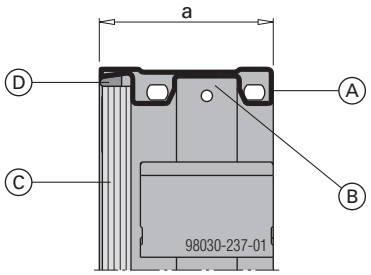
- Xlife sheet protected around the tie-holes by integrated form-tie protectors

Clean concrete surfaces with the innovative Xlife sheet

The Xlife sheet consists of a **combination of a traditional plywood core and a novel, innovative plastic coating**.
This combination of materials ensures high numbers of repeat uses, with superb concrete results every time, and reduces the proneness to damage.

- High quality concrete finish
- Less touching-up needed
- Less cleaning work – the Xlife sheet can also be cleaned using a high-pressure washer
- No burst-off plywood chips, and less water is absorbed through nail-holes

Dimensionally stable steel hollow-profile frame

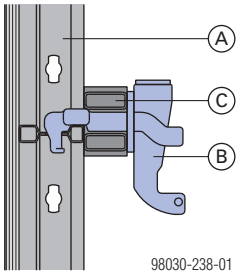


a ... 3 1/2" (9.2 cm)

A Frame profile
B Continuous hardware slot for inter-panel connectors
C Formwork sheet
D Silicone sealing strip

- Dimensionally stable hollow profiles
- Hot-dip galvanized for long life
- Strong cross-profiles
- Edge faces are easy to clean - so panels always abut tightly
- All-round hardware slot for fastening clamps at any point required
- Edges of formwork sheet are protected by frame profile
- Cross boreholes for corner configurations and bulkheads

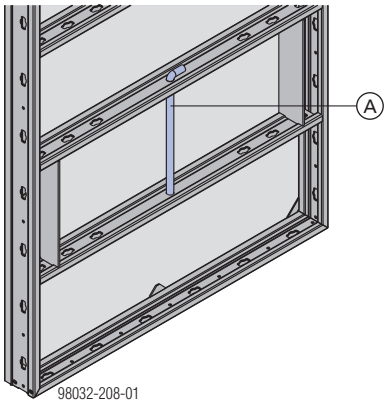
Accessories are easy to fasten in the cross profile



A Frami S Xlife panel
B Frami wedge clamp
C Frami universal waling

Safety handles

Note:
Do not get onto and climb up the formwork, or use the safety handles, until the panels have been properly braced.



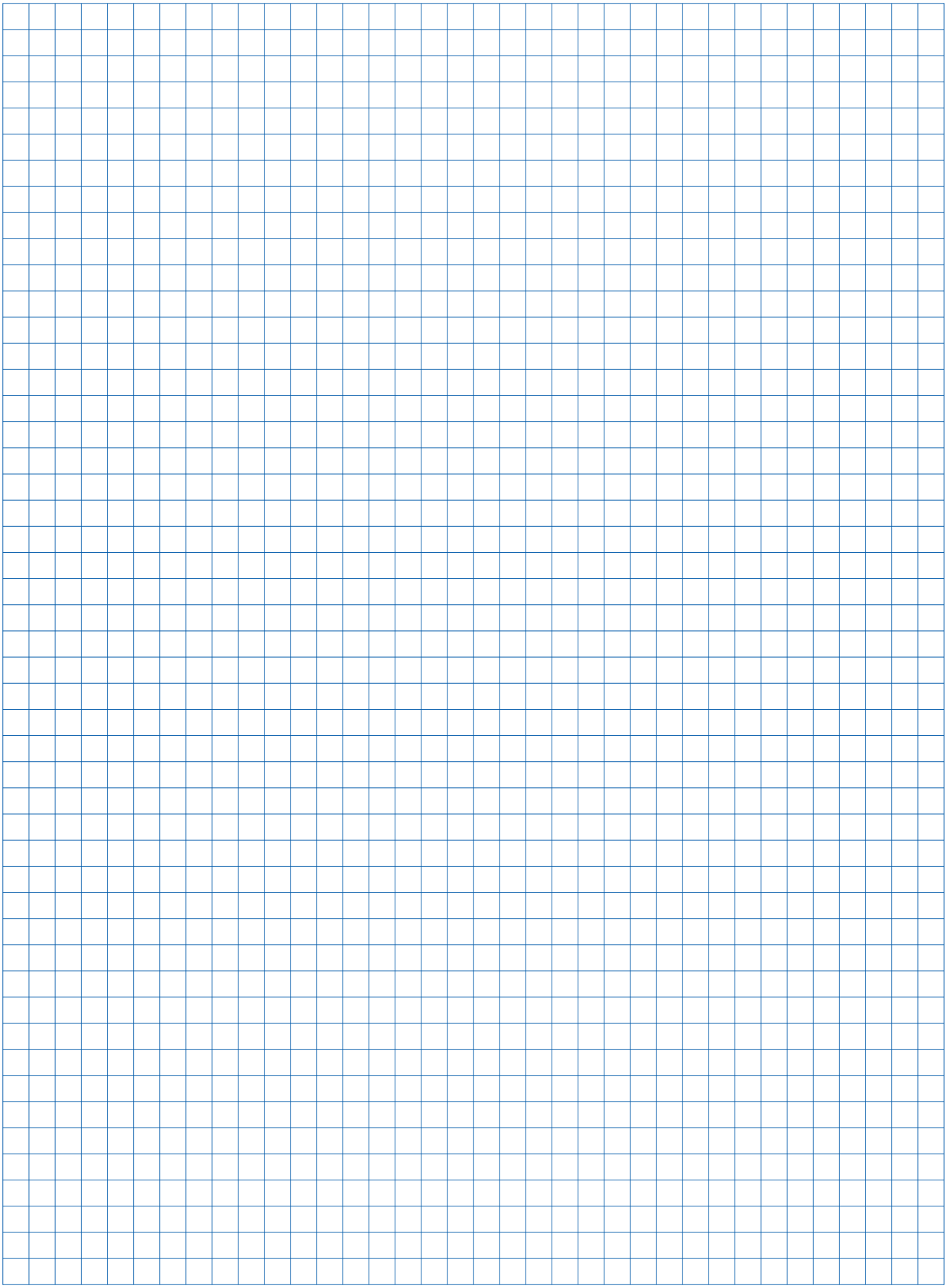
A Integral safety handle

- and are used to tie off safety harnesses.

WARNING
Do not use the safety handles as slinging points for crane-handling!
Danger of formwork dropping from crane!
➤ Use only suitable load-carrying equipment and slinging points. See "Resetting by crane" and "Transporting, stacking and storing".

Nail-holes

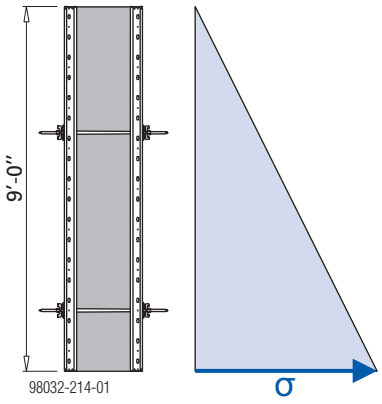
- are integrated in the frame profile to make it easier to attach or nail the panel to the ground or sills
- the nail-holes are located all around the frame, so the panels can be arranged either vertically or horizontally



Permissible fresh-concrete pressure

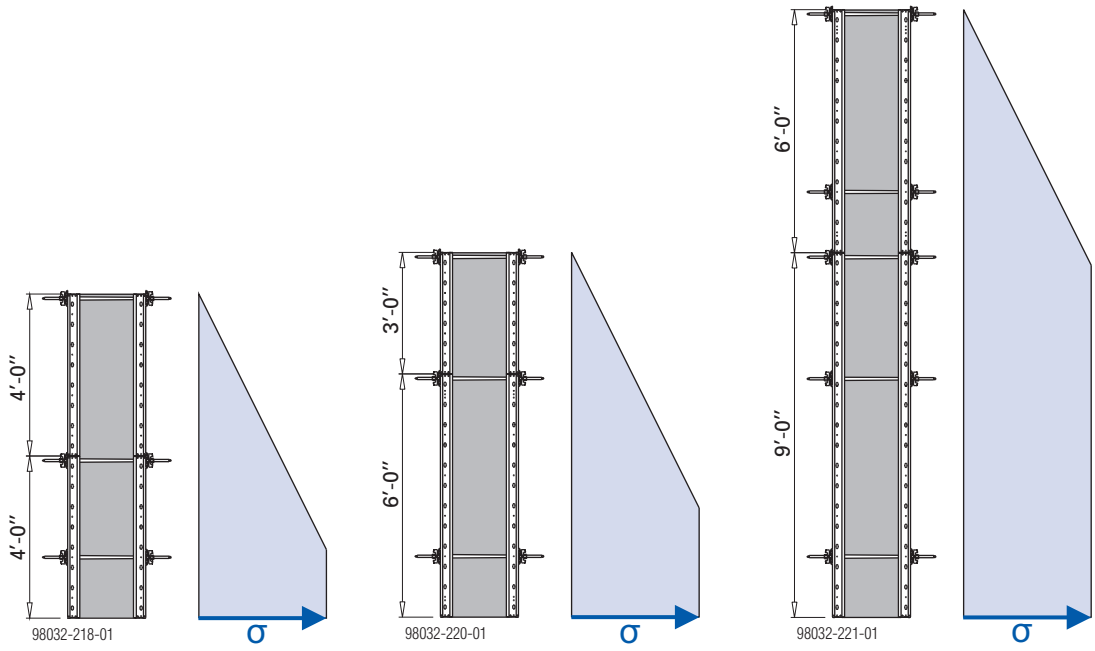
$\sigma_{hk, max, hydr}$ = 1430 psf (68.5 kN/m²)

Frami S Xlife panels 9'-0"
are hydrostatically loadable up to a **pour-height of 9'-0" (2.74 m)** with σ_{hk} = 1430 psf (68.5 kN/m²).



$\sigma_{hk, max}$ = 1000 psf (48 kN/m²)

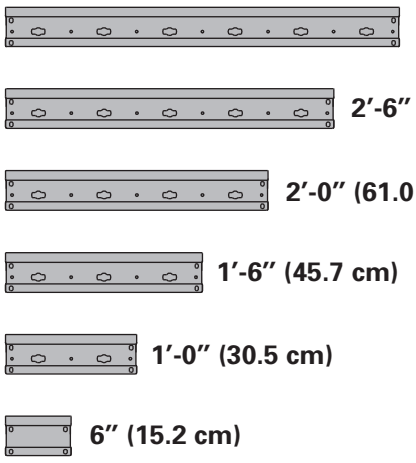
Permitted fresh-concrete pressure σ_{hk} on **vertically stacked formwork**: 1000 psf (48 kN/m²)



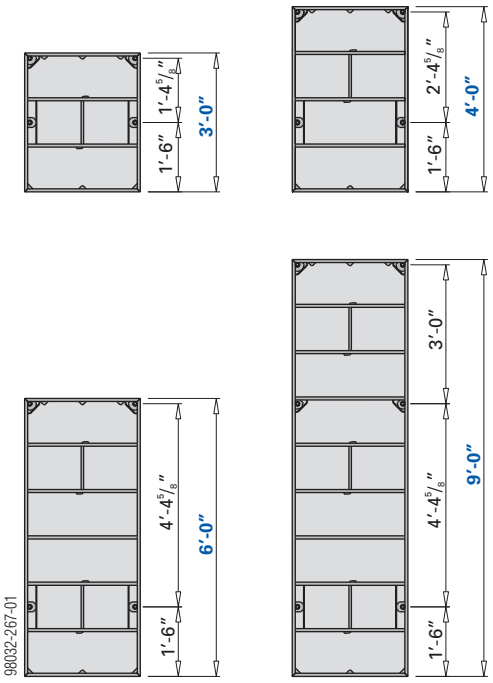
System grid

Frami S Xlife panels

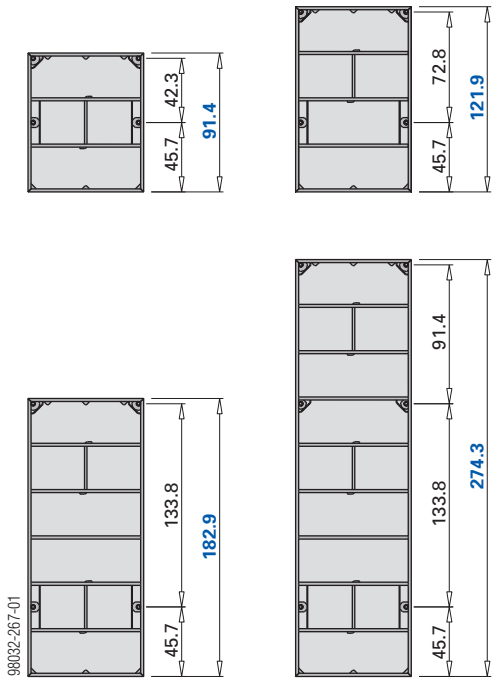
Widths of panels



Heights of panels



Dimensions in inch



Dimensions in cm

For pour heights of up to 9‘-0" (2.74 m) only **2 form-ties needed in the vertical**.

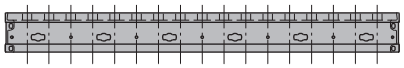
Frami Xlife universal panels

The **3'-0" wide** panels are also available as **Universal panels** with heights of 2'-0", 3'-0", 4'-0", 6'-0" and 9'-0".

The special hole pattern makes these panels particularly suitable for efficient forming of:

- corners
- wall junctions
- bulkheads
- columns

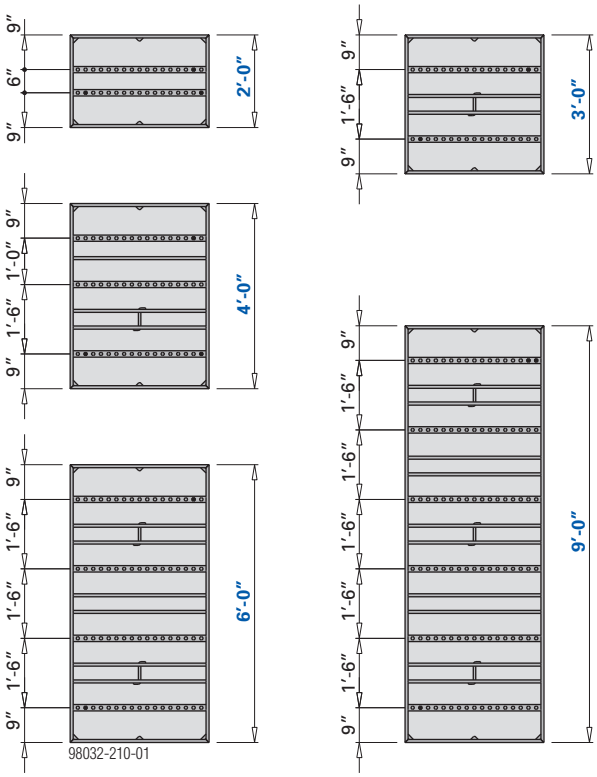
Panel width



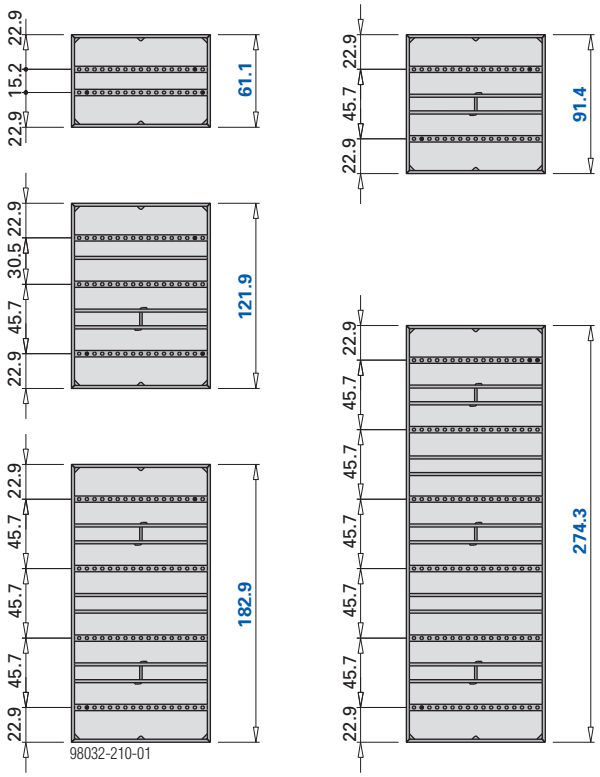
3′-0″ (91.4 cm)

98032-266-02

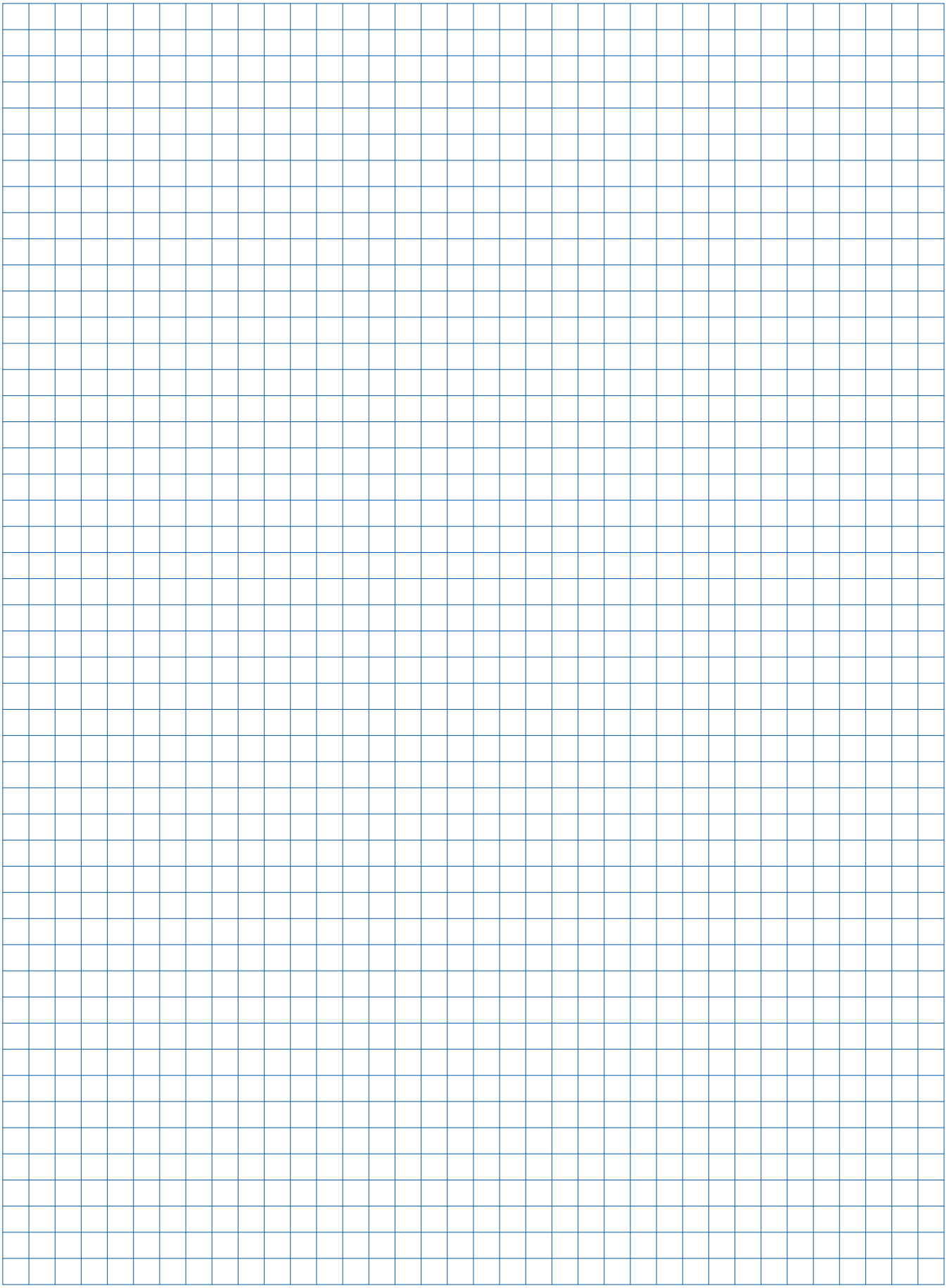
Heights of panels



Dimensions in inch



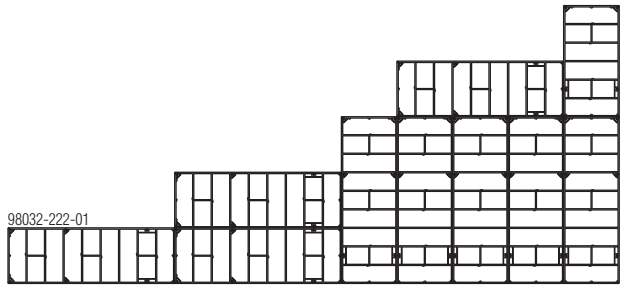
Dimensions in cm



Adaptability

Possible combinations

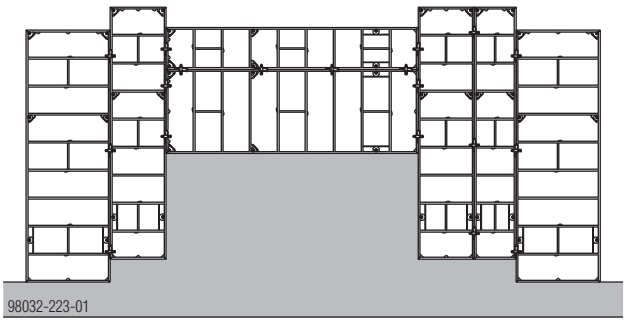
The perfect panel size-grid gives you innumerable possible combinations, in both width and height. You can use the panels either **vertical** or **horizontal**, and the **6" (15 cm) increment-grid** gives you optimum adaptability of the formwork to the dimensions of the structure, at all times.



Schematic representation

Infinite height offset

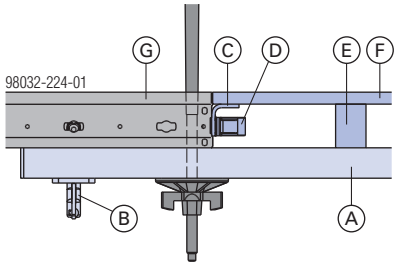
The continuous hardware slot around the inside of the Frami panels enables the clamps to be fastened anywhere on the frame. This allows any adjacent panels to be **staggered** to **any height required**, i.e. without being confined to any fixed grid. This means that the formwork can easily be accommodated to e.g. steps, slopes and uneven ground, with no extra work.



Schematic representation

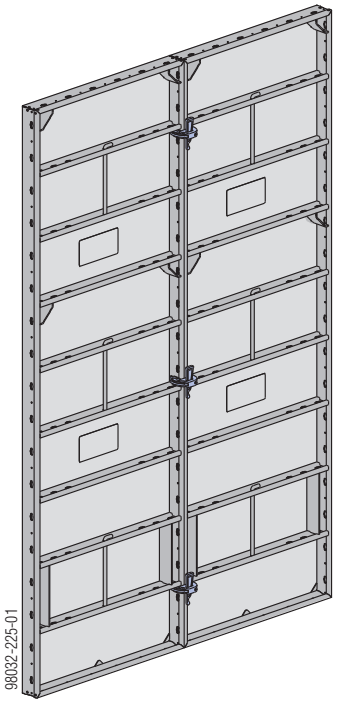
Continue forming with job-built fillers

The framed formwork Frami also gives you easy connections when you need to "make up" with job-built timber formwork. The Frami universal waling and filler angle make it easy for you to join the panels to dimensional lumber and plywood.



A	Frami universal waling
B	Frami wedge clamp
C	Frami S filler angle 3/4"
D	Frami clip
E	Dimensional lumber
F	Formwork sheeting
G	Frami S Xlife panel

Joining gangs



Attributes of the gang connectors:

- provide self-aligning, crane-handling-safe connections between the gangs
- no losable small parts
- dirt-resistant and hard-wearing for site use
- easy to fix, with a formwork hammer

Important note:

- Use a formwork hammer weighing max. 32 oz. (800 g).
- Do not oil or grease wedge-clamped joints.

Upright panels:

Panel height	Number of clamps
3'-0"	2
4'-0"	2
6'-0"	2
9'-0"	3

Horizontal panels:

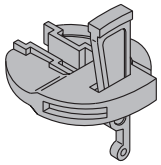
Panel width	Number of clamps
6''	1
1'-0''	1
1'-6''	1
2'-0''	2
2'-6''	2
3'-0''	2

For details regarding extra inter-panel connections for outside corners and bulkheads (for increased tensile loads): see "Inter-panel connections for increased tensile loads".

For details on the position of the connector components needed in vertical stacking, see "Vertical stacking of panels".

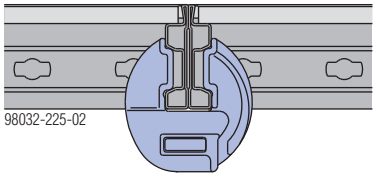
Simple inter-panel connections

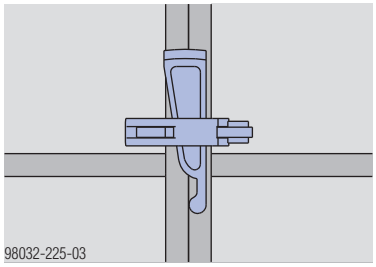
with the Frami clamp



Frami clamp:
Permitted tensile force: 2.245 kip (10.0 kN)
Permitted shear force: 1.12 kip (5.0 kN)
Permitted moment: 0.15 kip-ft (0.20 kNm)

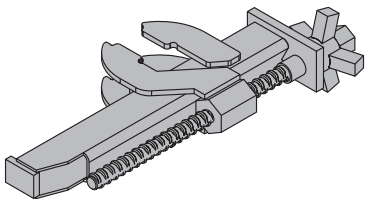
The continuous hardware slot running around the inside of the frame profile means that panels can be fastened together anywhere on the frame. This allows adjacent panels to be staggered in height, infinitely.





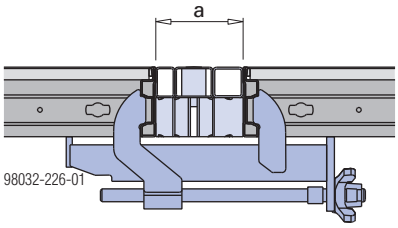
Self-aligning inter-panel connections and fillers

with the Frami adjustable clamp

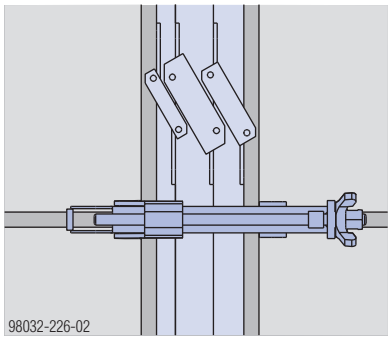


Frami adjustable clamp:
Permitted tensile force: 1.685 kip (7.5 kN)

Filler gaps can be closed easily and economically with Frami S steel fillers. With the Frami adjustable clamp, the panels are joined so that they are resistant to tensile forces, and are aligned at the same time. The adjustable clamp is placed directly over the cross profile.

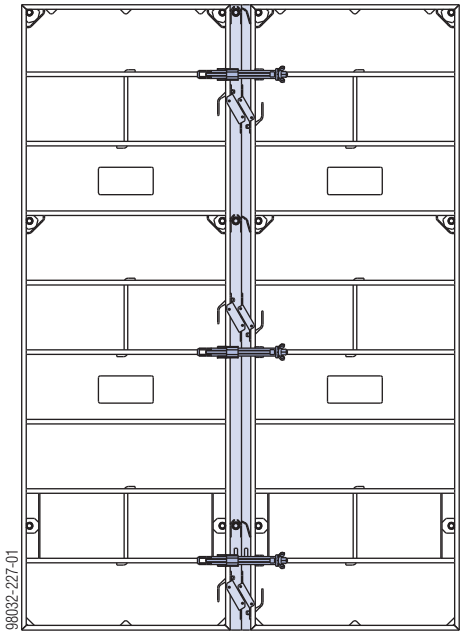


a ... max. 6" (15 cm)

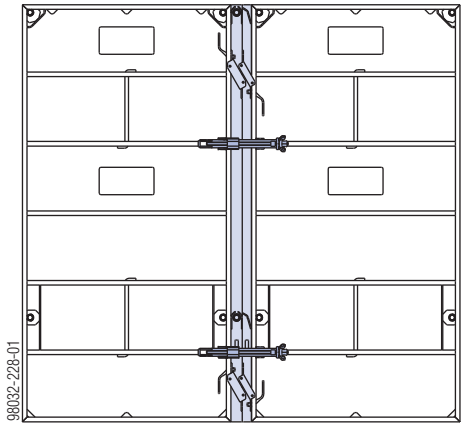


In cases where the Frami adjustable clamp would collide with steel fillers, universal walings, etc., it must be located next to the cross profile (instead of directly over it).

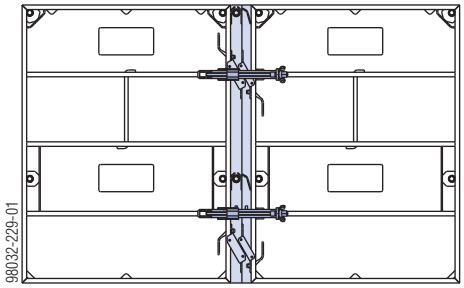
Formwork height: 9’-0" (2.74 m)



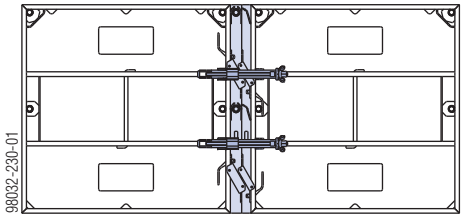
Formwork height: 6’-0" (1.82 m)



Formwork height: 4’-0" (1.22 m)

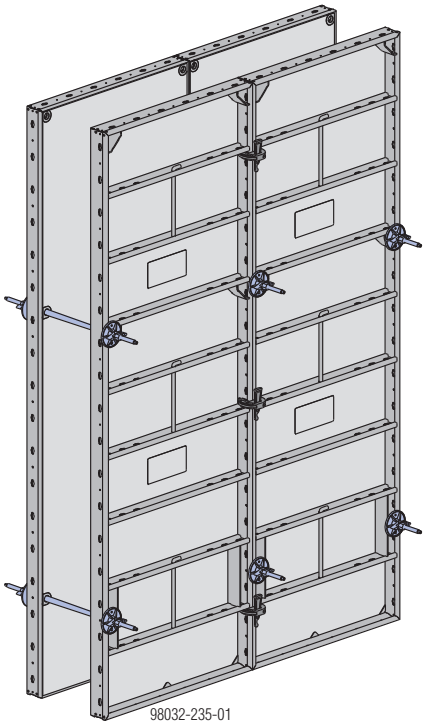


Formwork height: 3’-0" (0.91 m)



Form-tie system

Tying the Frami panels



Tying Frami S Xlife panels 9'-0":

Up to a **pour height** of **9'-0" (2.74 m)** (with no vertically stacked panels), **only 2 form-ties** are required in the vertical.

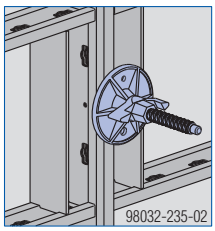
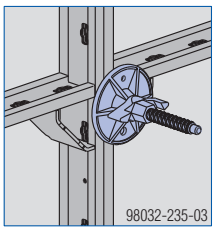
Apart from this, the basic rule here is:

Place a form-tie in every form tie hole within a panel that is not covered by a tie washer (e.g. at a panel joint, only tie one of the two adjoining panels).

Always tie in the bigger (wider) of the two panels.

For exceptions, see "Length adjustment using fillers" and "Vertical stacking of panels".

Form-tie situations

in the panel	when panels are vertically stacked
	

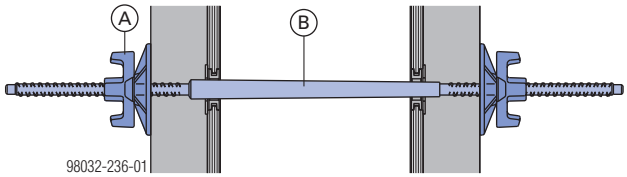
WARNING
Sensitive rod steel!
- Never weld or heat tie-rods.
- Tie rods that are damaged or have been weakened by corrosion or wear must be withdrawn from use.
- Only use approved tie-rods.

Close off any unneeded tie-holes with Frami S frame-hole plugs

Note:
Doka also offers economical solutions for creating watertight wall-ties.

For more information, see the User Information booklet "Doka form-ties for special requirements".

Taper-tie system 3/4" to 1"



A Super-plate 15.0
B Taper tie 3/4" to 1" & 5/8" [15.0] ends

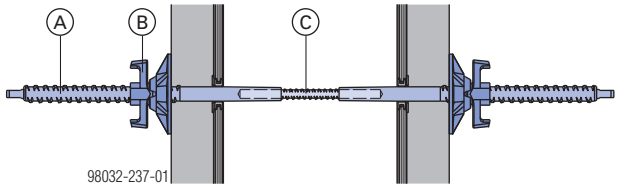
For forming wall thicknesses in the 6" to 30" (15.2 to 76.2 cm) range, there are 4 different types of taper tie:

Wall thickness:		Form-tie length
6" to 12"	(15.2 to 30.5 cm)	32"
12" to 18"	(30.5 to 45.7 cm)	38"
18" to 24"	(45.7 to 61.0 cm)	44"
24" to 30"	(61.0 to 76.2 cm)	52"

Note:
Always loosen the Super-plate on the thinner end of the taper tie first.

Taper tie 3/4" to 1" & 5/8" [15.0] ends:
Permitted capacity allowing a 2 : 1 factor of safety against failure: 18,000 lbs (80 kN)

She-bolt system 7/8"

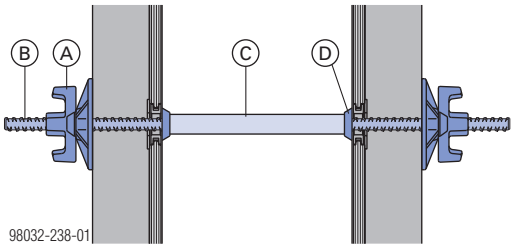


A She-bolt 7/8"x19"
B Super-plate 20.0 B
C Euro rod 5/8" (length = wall thickness - 4" (10 cm))

She-bolt system 7/8":
Permitted capacity allowing a 2 : 1 factor of safety against failure: 18,000 lbs (80 kN)

Form-tie system 15.0 ($^5/_8$"ø)

The Form-tie system 15.0 makes it possible to tie panels in narrow or confined spaces. For areas of application, see "Acute and obtuse-angled corners".



A Super-plate 15.0
B Tie-rod 15.0mm
C Plastic tube 22mm
D Universal cone 22mm

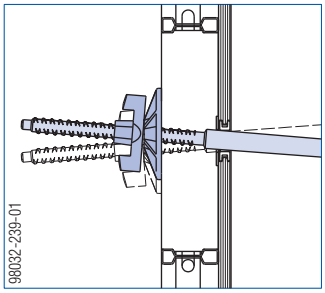
The "Plastic tubes 22mm" left behind in the concrete are sealed off with **"Plugs 22mm"**.

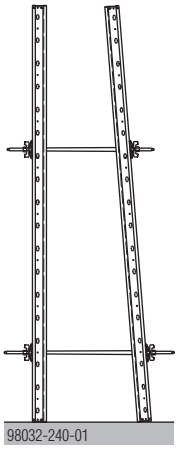
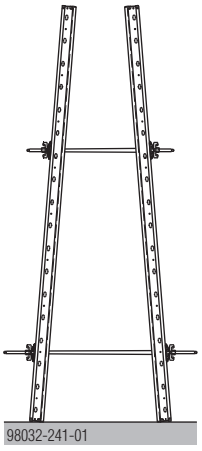
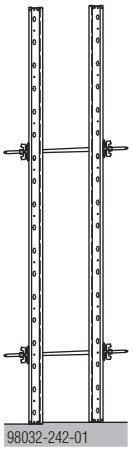
Spanner for tie-rod 15.0/20.0
For turning and holding the tie-rods.

Tie-rod 15.0mm:
Permitted capacity, allowing a 2 : 1 factor of safety: 22,000 lbs (98 kN)

Sloping ties on height-mismatched panels

Thanks to the special shape of the Super-plate, the panels can be inclined on one or both sides, and/or height-mismatched.

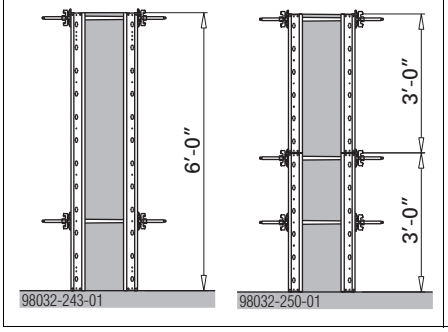


Inclined on one side	Inclined on both sides	Height mismatch
max. 4°	max. 2 x 4°	**Form-tie system 15.0**: max. $^1/_2$" per 6" wall thickness (1.2 cm per 15 cm) **Taper tie 3/4" to 1" & 5/8" [15.0] ends**: max. $^1/_4$" per 6" wall thickness (0.6 cm per 15 cm)
 98032-240-01	 98032-241-01	 98032-242-01

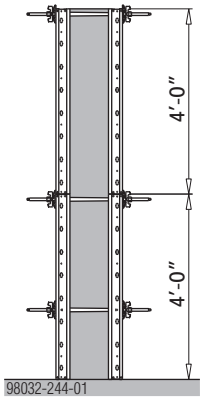
Note:
Secure inclined panels against uplift.

Form-tie situations

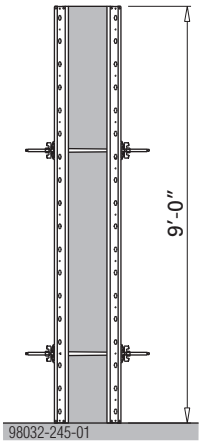
Pour height
up to 6'-0" (1.82 m)



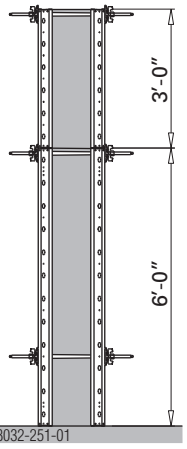
Pour height
up to 8'-0" (2.44 m)

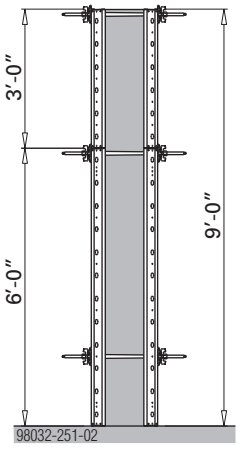


Pour height
up to 9'-0" (2.74 m)



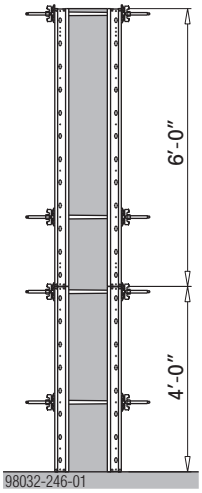
(stacked vertically or horizontally)





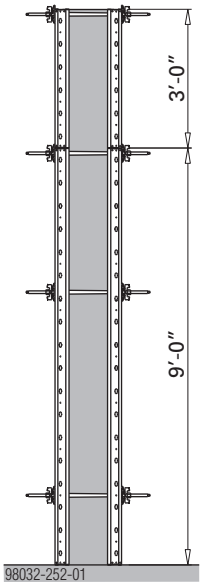
Stack max. 3'-0" on top of one 6'-0" high basic panel!

Pour height
up to 10'-0" (3.05 m)



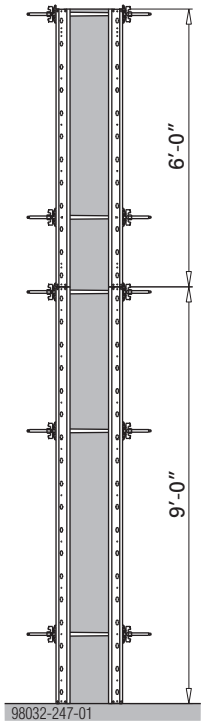
Pour height
up to 12'-0" (3.66 m)

(stacked vertically or horizontally)



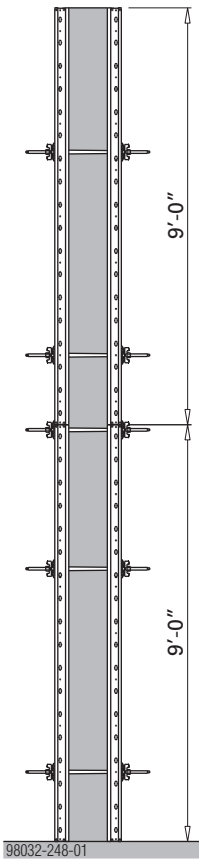
Pour height
up to 15'-0" (4.57 m)

(stacked vertically)



Pour height
up to 18'-0" (5.48 m)

(stacked vertically)

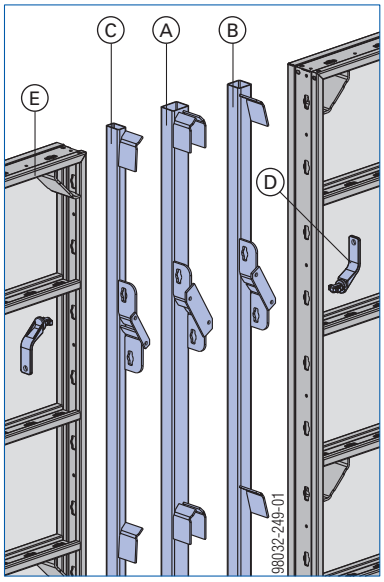


Length adjustment using fillers

Filler gaps: 1" - 6" (2.5 - 15 cm)

with steel fillers and adjustable clamps

By combining the steel filler widths of 1", 1 $^1/_2$", and 2" in various ways, the closures can be made in $^1/_2$" (13 mm) increments.

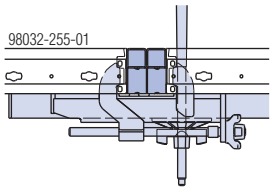
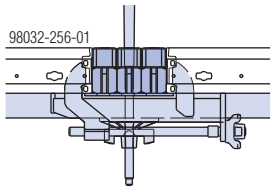


A	Frami S steel filler 2" (with through-tie facility)
B	Frami S steel filler 1 $^1/_2$"
C	Frami S steel filler 1"
D	Frami clip
E	Frami S Xlife panel

In order to get a firm link between the filler and the panels, fix the steel fillers in place with Frami clips **(D)** .

Note:

Form ties can be placed through the 2" (5 cm) wide Frami S steel filler. The steel filler through which the tie is being placed must be fitted in a central position.

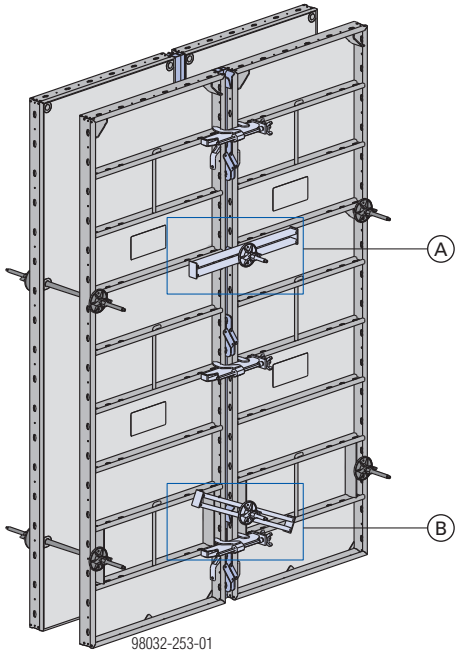
Up to **3"** (7,6 cm) filler width	Up to **6"** (15 cm) filler width
Place form-ties in panel, with universal waling	Place form-ties in filler, with universal waling
	

We also offer several other solutions for filler widths of 2" (5 cm), 3" (7.6 cm), and 6" (15 cm).

Any unneeded tie-holes in the steel filler should be closed off with **Frami plugs**.

Frami universal waling:

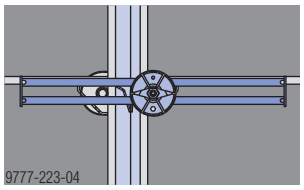
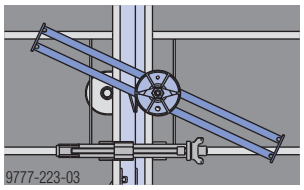
Permitted moment: 0.96 kip-ft (1.3 kNm)



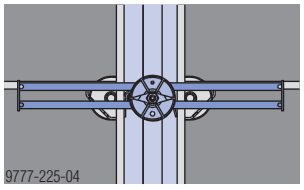
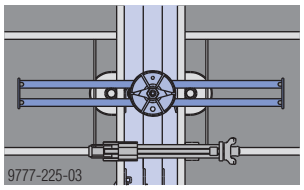
Note:

Where form-ties are inserted through the panel frames, the Universal waling must rest on the cross profile.

Tying through the panel

(A) Universal waling in the horizontal (over the cross profile)	**(B)** Universal waling at an angle (so that it rests on the cross profile)
	

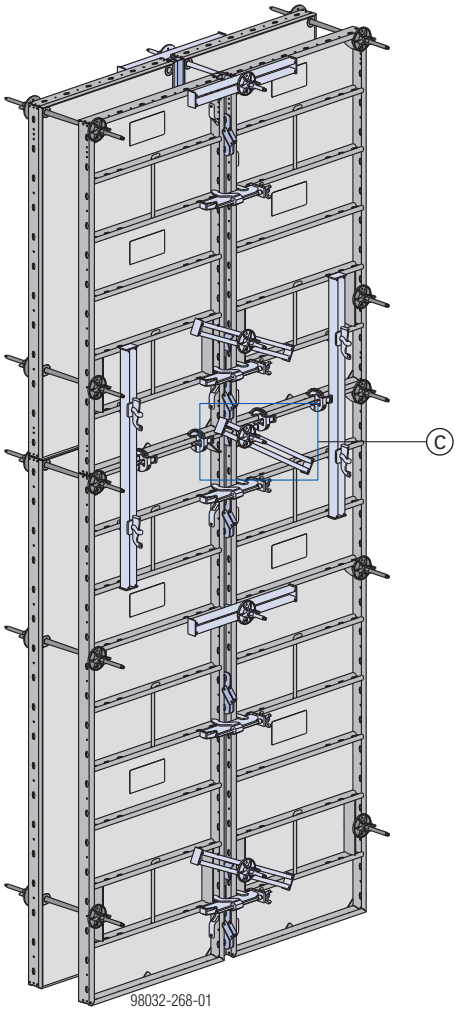
Tying through the filler

Universal waling in the horizontal	
	

Vertical stacking with fillers

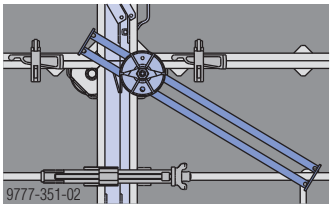
Due to the space constraints encountered here, the Universal waling is generally positioned on the panel joint at an angle.

Formwork height: 15’-0" (4.57 m)

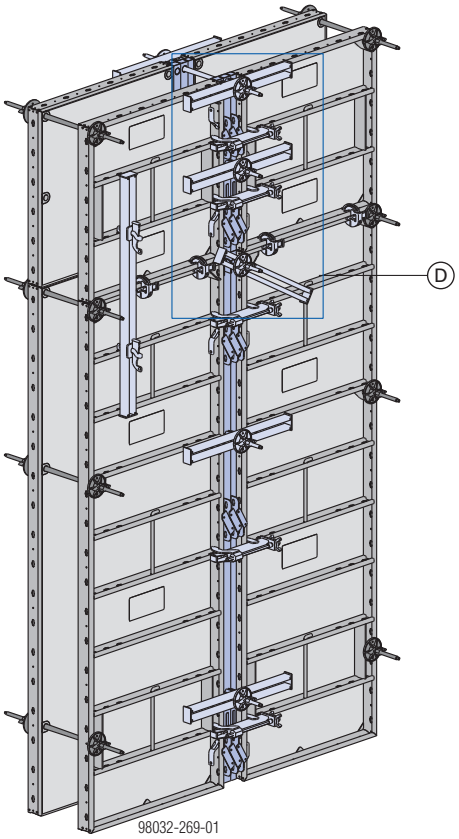


Tying at the panel joint (through the panel)

(C) Universal waling at an angle

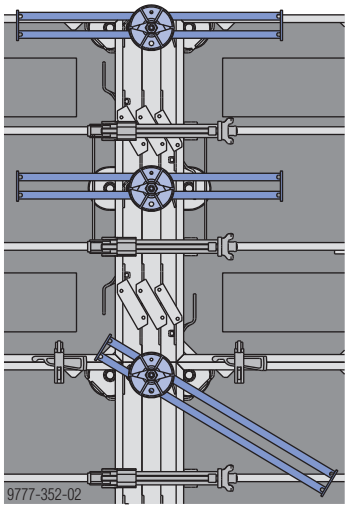


Formwork height: 12’-0" (3.66 m)



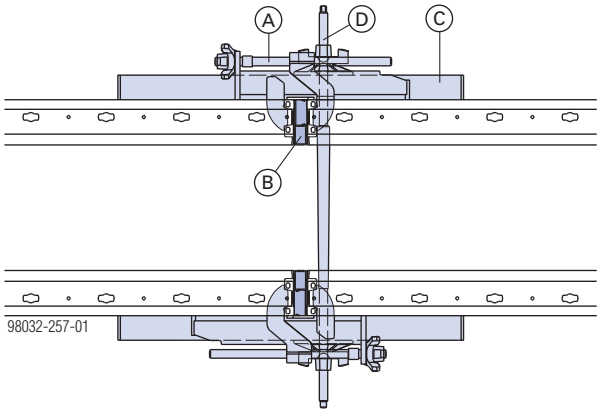
Tying at the panel joint (through the filler)

(D) Universal waling at an angle



Filler width 1" (2.5 cm)

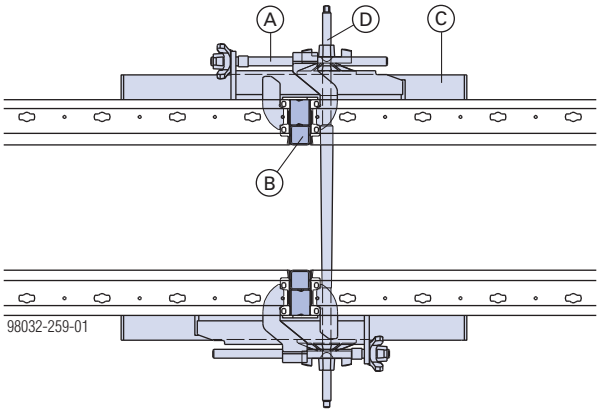
Place form-ties in panel, with universal waling



1 Frami S steel filler 1"

Filler width 1 $^1/_2$" (3.8 cm)

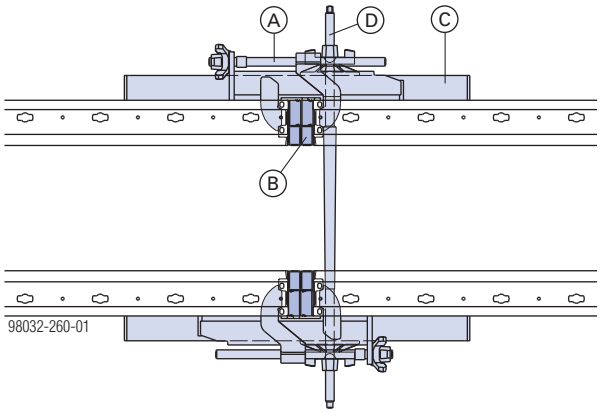
Place form-ties in panel, with universal waling



1 Frami S steel filler 1$^1/_2$"

Filler width 2" (5.1 cm)

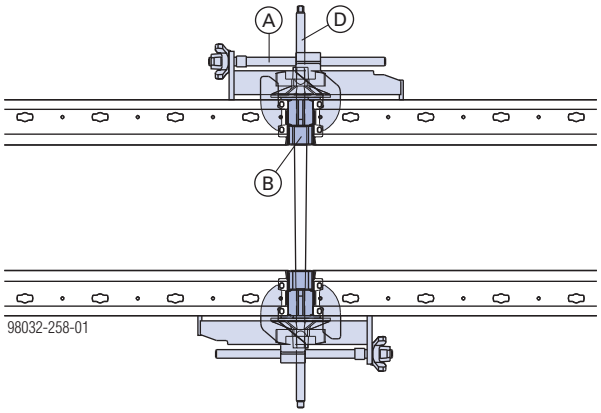
Place form-ties in panel, with universal waling



2 Frami S steel fillers 1"

Filler width 2" (5.1 cm)

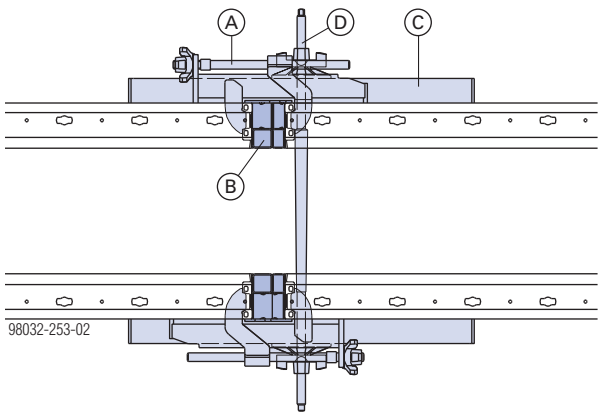
Place form-ties in filler, without universal waling.



1 Frami S steel filler 2"

Filler width 2 $^1/_2$" (6.4 cm)

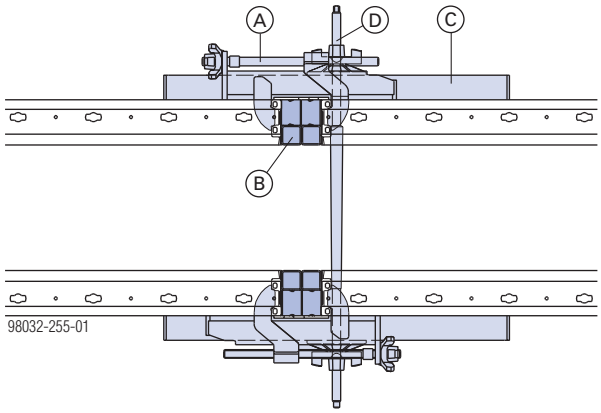
Place form-ties in panel, with universal waling



1 Frami S steel filler 1"
1 Frami S steel filler 1$^1/_2$"

Filler width 3" (7.6 cm)

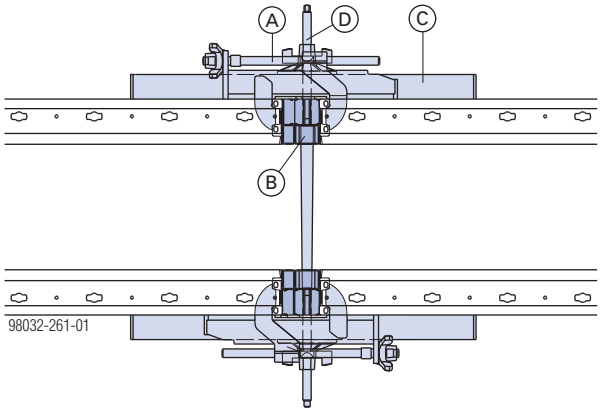
Place form-ties in panel, with universal waling



2 Frami S steel fillers 1$^1/_2$"

Filler width 3" (7.6 cm)

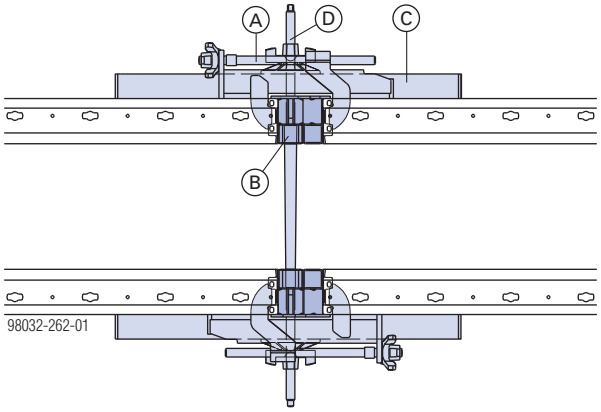
Place form-ties in filler, with universal waling



1 Frami S steel filler 1"
1 Frami S steel filler 2"

Filler width 3 1/2" (8.9 cm)

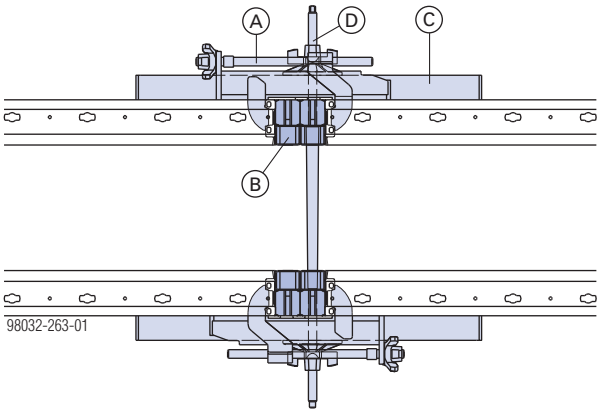
Place form-ties in filler, with universal waling



1 Frami S steel filler 1 1/2"
1 Frami S steel filler 2"

Filler width 4" (10.2 cm)

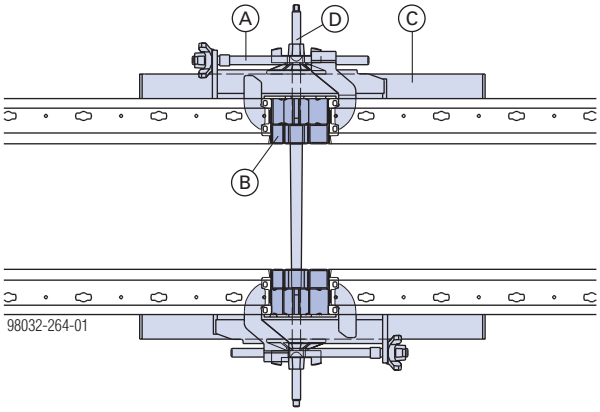
Place form-ties in filler, with universal waling



2 Frami S steel fillers 2"

Filler width 4 1/2" (11.4 cm)

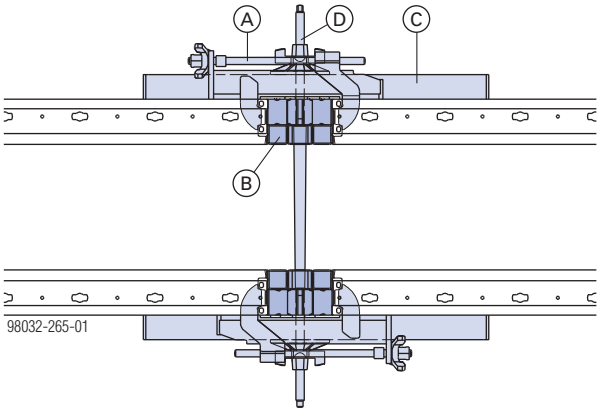
Place form-ties in filler, with universal waling



1 Frami S steel filler 1"
1 Frami S steel filler 1 1/2"
1 Frami S steel filler 2"

Filler width 5" (12.7 cm)

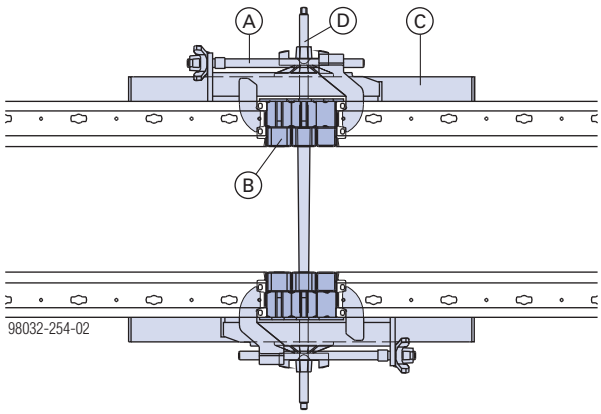
Place form-ties in filler, with universal waling



2 Frami S steel fillers 1 1/2"
1 Frami S steel filler 2"

Filler width 5 1/2" (14 cm)

Place form-ties in filler, with universal waling

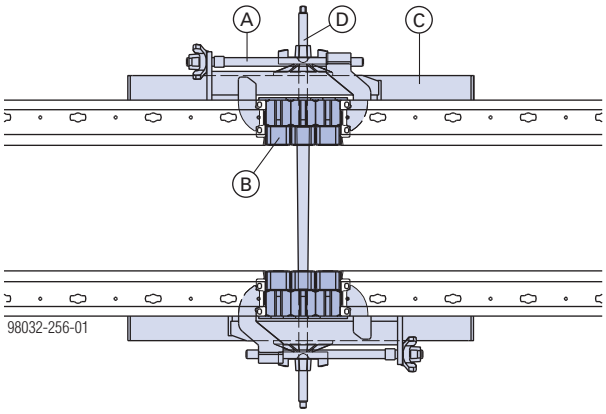


1 Frami S steel filler 1 1/2"
2 Frami S steel fillers 2"

A Frami adjustable clamp
B Frami S steel filler
C Frami universal waling
D Form-tie

Filler width: 6" (15.2 cm)

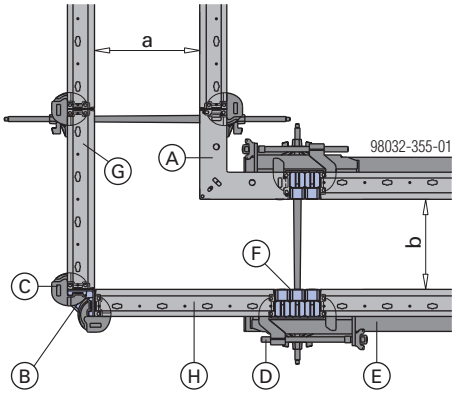
Place form-ties in filler, with universal waling



3 Frami S steel fillers 2"

A	Frami adjustable clamp
B	Frami S steel filler
C	Frami universal waling
D	Form-tie

A combination of three Frami S steel fillers 2" is used if it is necessary to tie through a 6" (15 cm) filler.

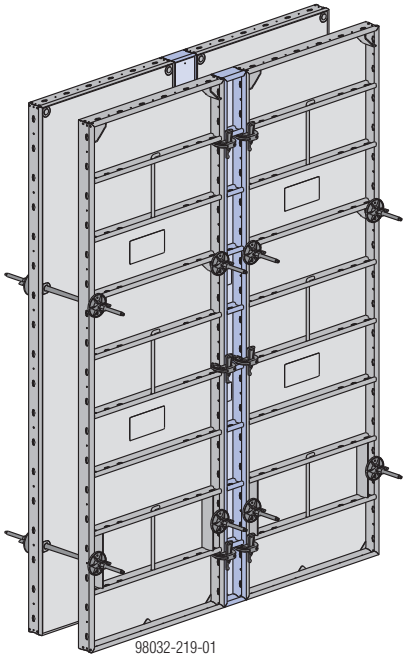


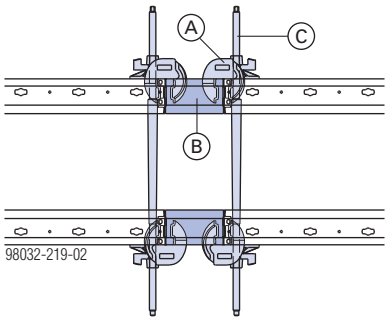
a ... 14" (35.5 cm)
b ... 12" (30.5 cm)

A	Frami S Xlife inside corner
B	Frami S outside corner
C	Frami clamp
D	Frami adjustable clamp
E	Frami universal waling
F	Frami S steel filler
G	Frami S Xlife panel 2'-0"
H	Frami S Xlife panel 2'-0"

Filler width: 6" (15.2 cm)

with Frami S Xlife panel 6"





A	Frami clamp
B	Frami S Xlife panel 6"x9'-0"
C	Tie-rod

using filler angles and plywood

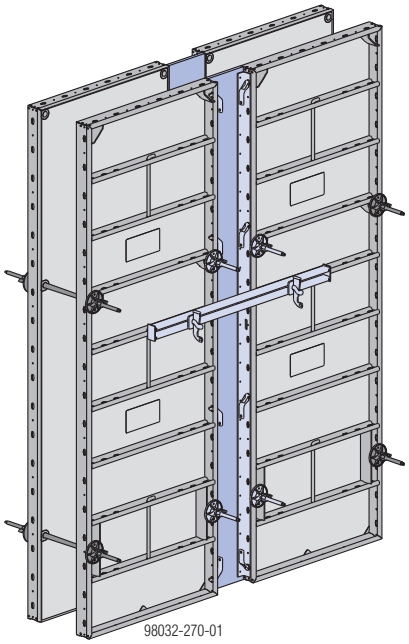
Required numbers of Frami clips:

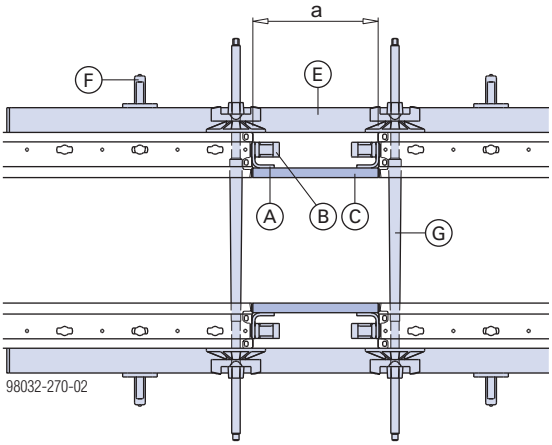
Frami S filler angle 3/4"	N° of units
3'-0"	2
4'-0"	2
6'-0"	3
9'-0"	4

Important note:

Where tensile loads occur (on corners and bulkheads), suitable tension anchoring must be provided.

Filler width: 4" - 10" (10.2 - 25.4 cm)

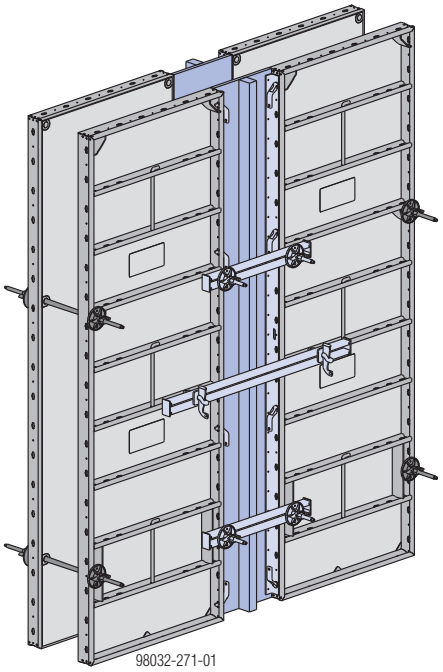


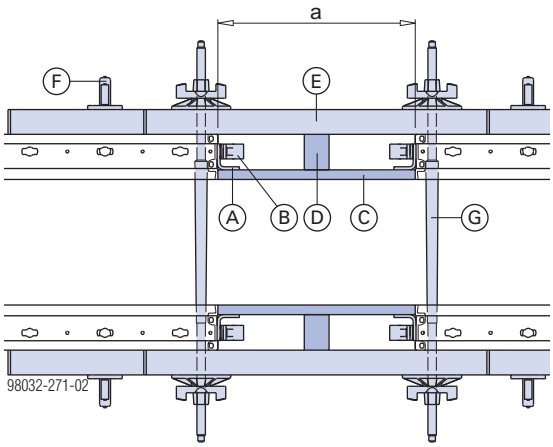


a ... 4" to 10" (10.2 to 25.4 cm)

A	Frami S filler angle
B	Frami clip
C	Plywood 3/4"
E	Frami universal waling 1.25 m
F	Frami wedge clamp
G	Form-tie

Filler width: > 10" - 20" (> 25.4 - 50.8 cm)





a ... > 10" to 20" (> 25.4 to 50.8 cm)

A	Frami S filler angle
B	Frami clip
C	Plywood 3/4"
D	Dimensional lumber 2 3/4"
E	Frami universal waling 0.70m and 1.25m
F	Frami wedge clamp
G	Form-tie

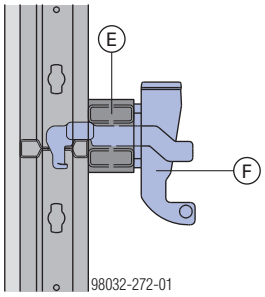
Possible ways of attaching Universal walings:

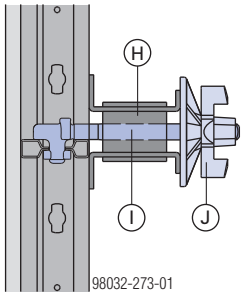
For accessories with an **overall height of 2" (5 cm)** (Frami universal waling **(E)**):

- Frami wedge clamps **(F)**

For accessories with an **overall height of 2" to 4" (5 cm to 10 cm)** (e.g. Framax S universal waling **(H)**):

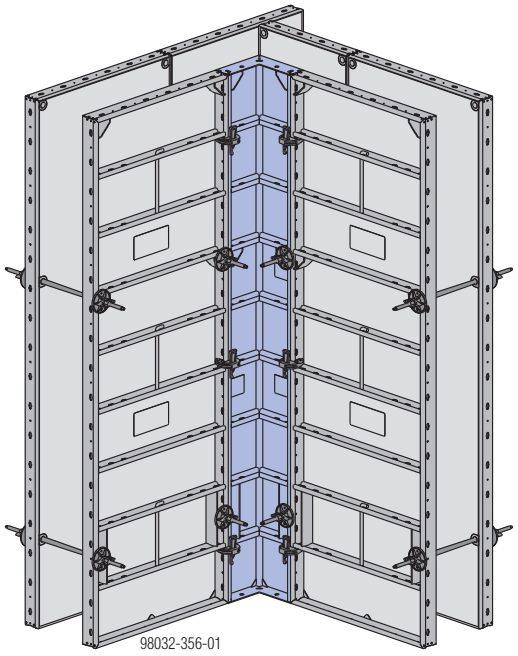
- Frami universal fixing bolt **(I)** + Super-plate **(J)**

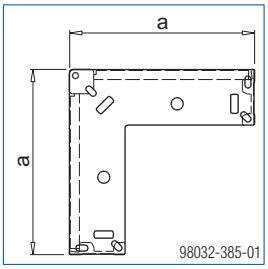




90 degree corners

The corner solutions are based on the strong, torsion-proof **Frami S Xlife inside corner.**





a ... 12" (30.5 cm)

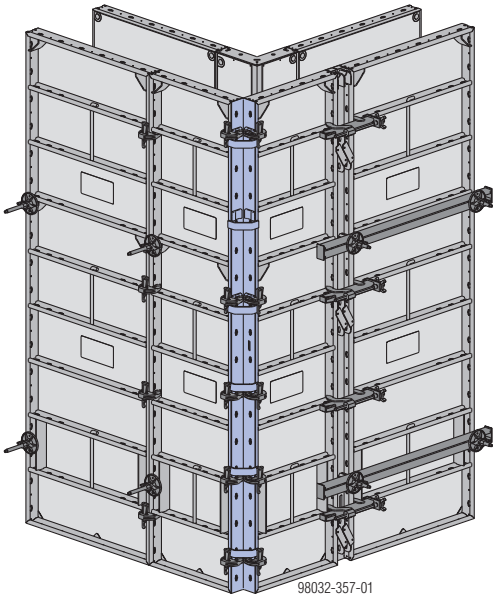
There are **2 ways** of forming right-angled **outside corners**:

- with a Frami S Xlife universal panel
- with a Frami outside corner

For details regarding extra clamps on outside corners (for increased tensile loads) see "Inter-panel connections for increased tensile loads".

with a Frami outside corner

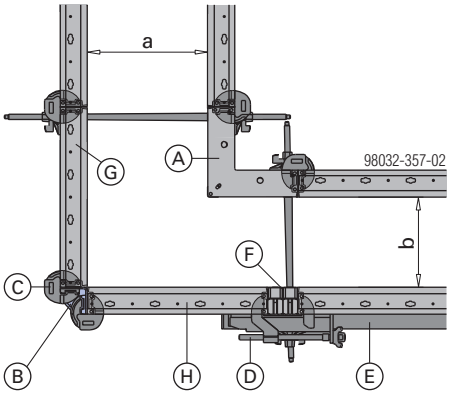
The Frami outside corner is an easy and problem-free way of forming corners in narrow trench situations or where large wall thicknesses are called for.



Required numbers of Frami clamps and Frami clip:

	Up to a wall thickness of		
	16" (41 cm)	24" (61 cm)	30" (76 cm)
Outside corner 3'-0"	4	4	4
Outside corner 4'-0"	6	6	6
Outside corner 6'-0"	6	8	8 + 4[1)]
Outside corner 9'-0"	10	12	12 + 4[1)]

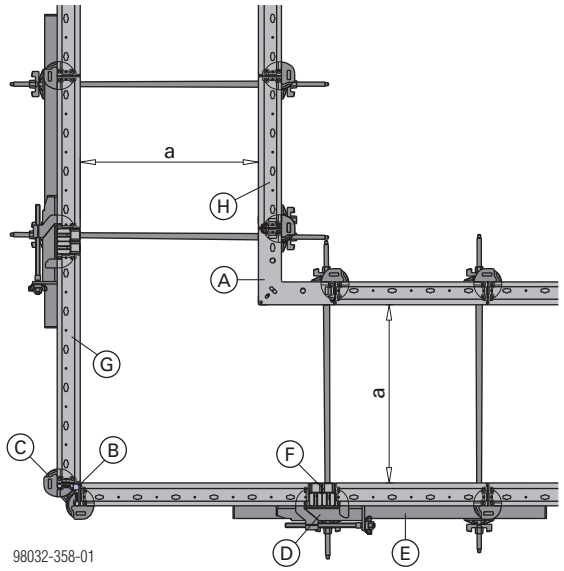
[1)] Number of Frami clips



a ... 16" (40.6 cm)
b ... 12" (30.5 cm)

A	Frami S Xlife inside corner
B	Frami S outside corner
C	Frami clamp
D	Frami adjustable clamp
E	Frami universal waling
F	Frami S steel filler
G	Frami S Xlife panel 2'-0"
H	Frami S Xlife panel 2'-0"

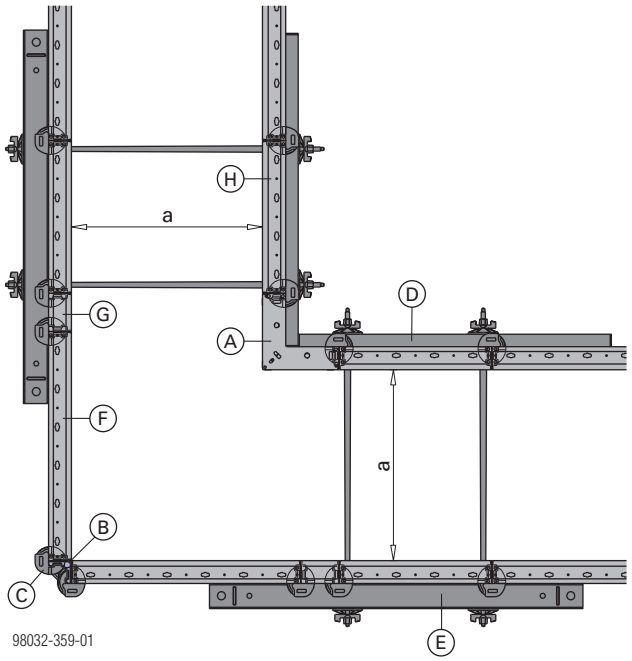
Example with a wall thickness of 28" (71 cm)



a ... 28" (71 cm)

A	Frami S Xlife inside corner
B	Frami S outside corner
C	Frami clamp + Frami clip
D	Frami adjustable clamp
E	Frami universal waling
F	Frami S steel filler
G	Frami S Xlife panel 3’-0"
H	Frami S Xlife panel (max. 2’-0")

Example with a wall thickness of 30" (76 cm)

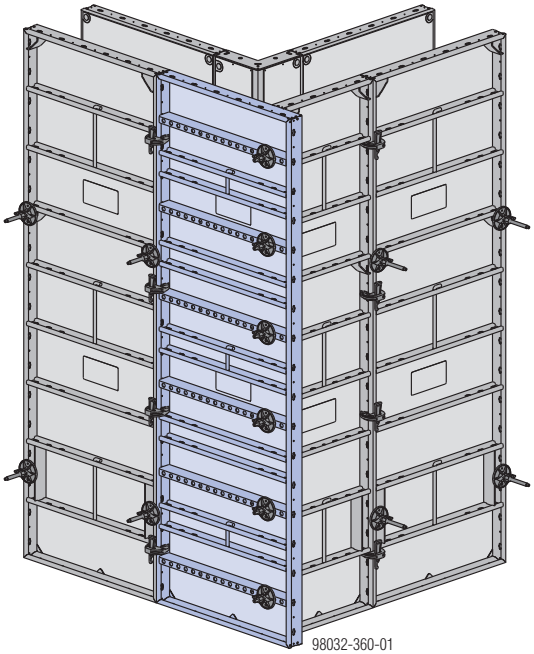


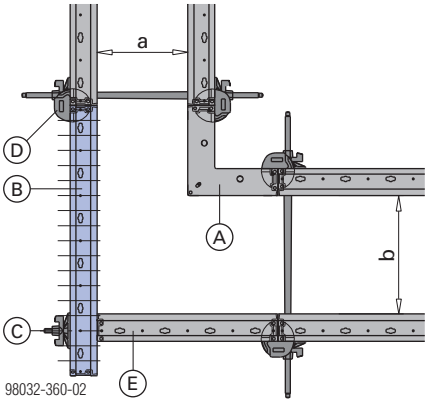
a ... 30" (76 cm)

A	Frami S Xlife inside corner
B	Frami S outside corner
C	Frami clamp + Frami clip
D	Frami universal waling
E	Framax S universal waling
F	Frami S Xlife panel 3’-0"
G	Frami S Xlife panel 6"
H	Frami S Xlife panel (max. 2’-0")

with a Frami S Xlife universal panel

When a universal panel is used, a wall-thickness grid with 2" (5.1 cm) increments is available.





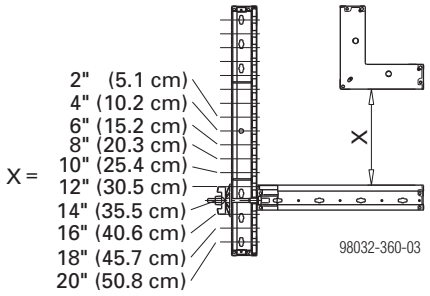
a ... 12" (30.5 cm)
b ... 16" (40.6 cm)

A	Frami S Xlife inside corner
B	Frami S Xlife universal panel
C	Frami universal fixing bolt + Super-plate 15.0
D	Frami clamp
E	Frami S Xlife panel 2'-0"

Note:

When steel fillers are used, it is also possible to handle wall thicknesses of up to 24" (61 cm).

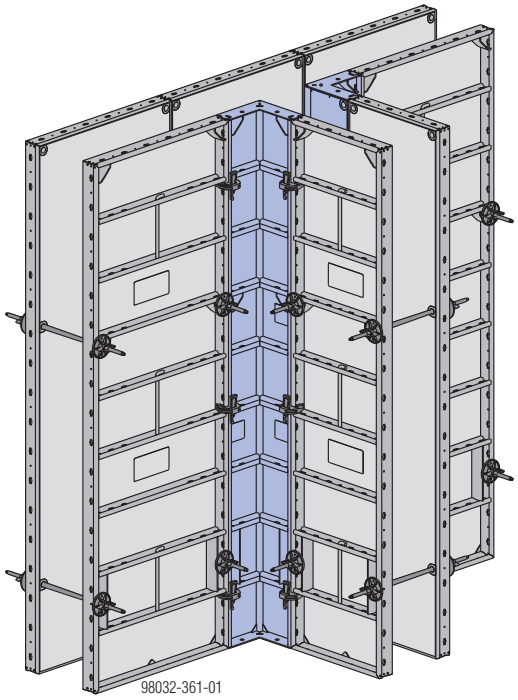
Attainable wall thicknesses in a 2" (5.1 cm) increment-grid:



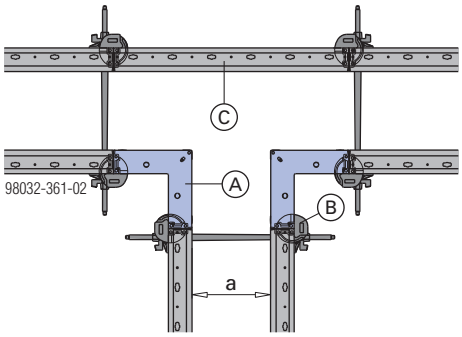
Required numbers of Frami universal fixing bolts + Super-plates 15.0:

Universal panel 3'-0"x3'-0"	2
Universal panel 3'-0"x4'-0"	3
Universal panel 3'-0"x6'-0"	4
Universal panel 3'-0"x9'-0"	6

T-junction with Frami inside corner



Wall thicknesses up to 20" (50.8 cm)

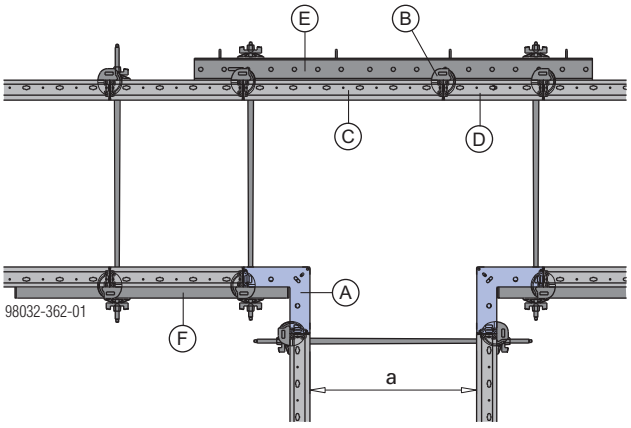


a ... 12" (30.5 cm)

A	Frami S Xlife inside corner
B	Frami clamp
C	Frami S Xlife panel 3'-0"

Where 4" steel fillers are used on both sides, wall thicknesses of up to 20" (50.8 cm) can be formed.

Wall thicknesses up to 30" (76.2 cm)



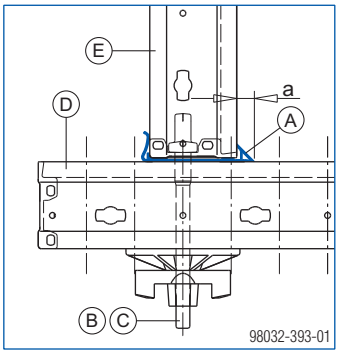
a ... 30" (76.2 cm)

A	Frami S Xlife inside corner
B	Frami clamp
C	Frami S Xlife panel 3'-0"
D	Frami S Xlife panel 1'-6"
E	Multi-purpose waling WS10 Top50 6'-0"
F	Frami universal waling

Chamfer edges

with Frami frontal triangular ledge

The Frami frontal triangular ledge can be pushed over the end face of the panel (no nails needed). For forming outside corners, it is used with the universal panel (integrated slot grid for universal fixing bolts). It is also possible to form edges using the triangular chamfer, of course.

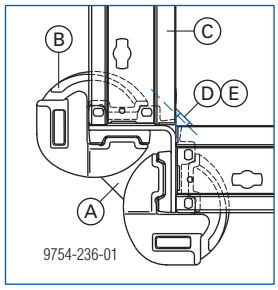


a ... 3/4" (20 mm)

A	Frami S frontal triangular ledge or Frami S frontal triangular ledge 3/4" or triangular chamfer
B	Frami universal fixing bolt
C	Super-plate 15.0
D	Frami S Xlife universal panel
E	Frami S Xlife panel

with triangular chamfer

Where outside corners are formed using the Frami outside corner, the Frami clamps used for the interconnection mean that the triangular chamfer has to be used here.

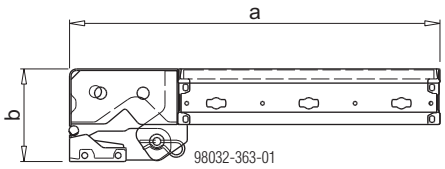


A	Frami S outside corner
B	Frami clamp
C	Frami S Xlife panel
D	Triangular chamfer
E	Wire nail

Triangular chamfers can also be used on corners formed using the Universal panel.

Pilasters

Pilasters can be formed quickly using the Frami S Xlife pilaster panels.

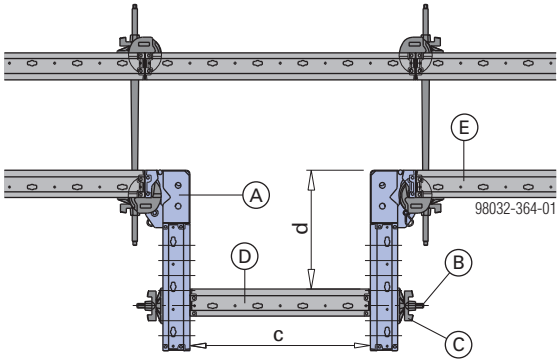


a ... 24" (61 cm)
b ... 6" (15.2 cm)

The Frami S Xlife pilaster panel permits pilaster depths of up to 20" (51 cm), in 2" (5.1 cm) increments, and of up to 24" (61 cm) when outside corners are used.

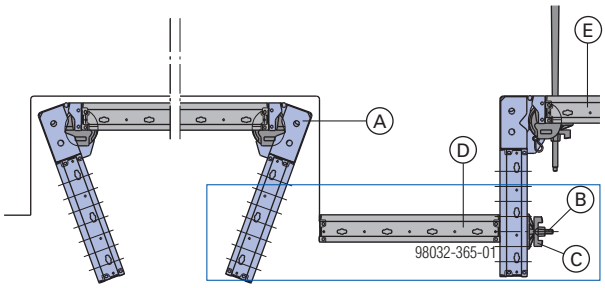
2 positions / functions:

- bolted in place at right-angles –> for pouring



c ... max. 24" (61 cm)
d ... 8" - 20" (20.3 - 51 cm)

- folded closed –> for stripping and resetting the formwork



A	Frami S Xlife pilaster panel
B	Frami universal fixing bolt 5-12cm
C	Super-plate 15.0
D	Frami S Xlife panel
E	Frami S Xlife panel > 6" (without filler)

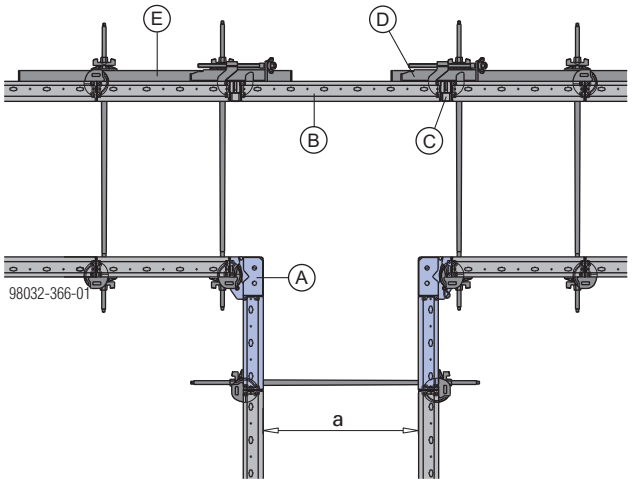
Required number of connectors per pilaster:

Panel height	Universal fixing bolts + Super-plates 15.0
3'-0"	4
4'-0"	4
6'-0"	6
9'-0"	8

To ensure that the formwork can be lifted safely, bolt the Frami S Xlife pilaster panel in the "folded closed" position.

T-junction with Frami S Xlife pilaster panel

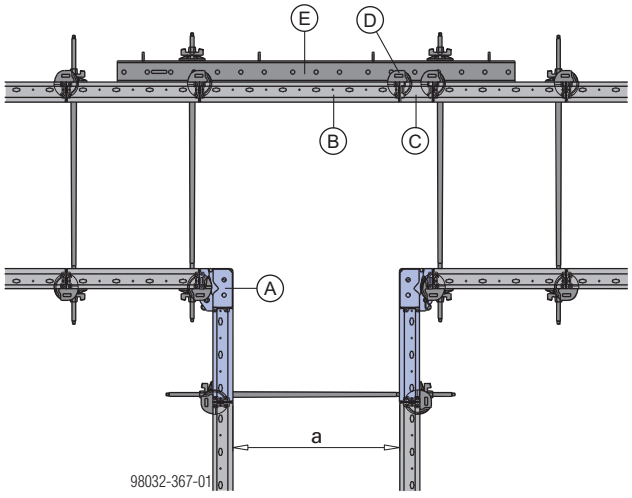
Wall thicknesses from 26" to 28" (66 to 71 cm)



a ... 26" to 28" (66 to 71 cm)

A	Frami S Xlife pilaster panel
B	Frami S Xlife panel 3'-0"
C	Frami S steel filler
D	Frami adjustable clamp
E	Frami universal waling

Wall thicknesses up to 30" (76.2 cm)

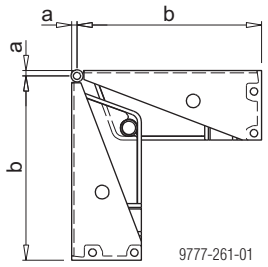
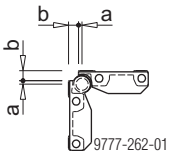


a ... 30" (76.2 cm)

A	Frami S Xlife pilaster panel
B	Frami S Xlife panel 3'-0"
C	Frami S Xlife panel 6"
D	Frami clamp
E	Multi-purpose waling WS10 Top50 6'-0"

Acute and obtuse-angled corners

Frami also has the perfect solution ready for acute and obtuse-angled corners - the Frami hinged corners.

Hinged inside corner I	Hinged outside corner A
 a ... 1/4" (0.7 cm) b ... 9 5/8" (24.3 cm)	 a ... 1 3/4" (4.6 cm) b ... 5 1/8" (13.1 cm)

N° of universal walings in the outside and inside corners:

Panel height	N° of universal walings
3'-0"	4
4'-0"	4
6'-0"	4
9'-0"	8

Position of the universal walings:
In every support level of the Hinged inside corner I.

Note:

For angles of less than 120°, no universal walings are needed in inside corners.

Important note:

If there are fillers, fit extra Universal walings as shown in "Length adjustment using fillers".

Number of Frami clamps needed in the whole hinged outside corner (i.e. for both sides):

Panel height	Width of panel next to hinged outside corner	
	up to 2'-0"	up to 3'-0"
3'-0"	4	4
4'-0"	4	6
6'-0"	6	8
9'-0"	8	12

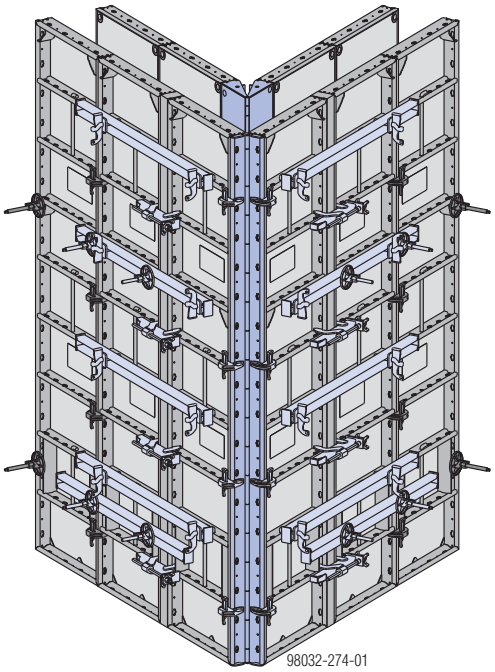
Important note:

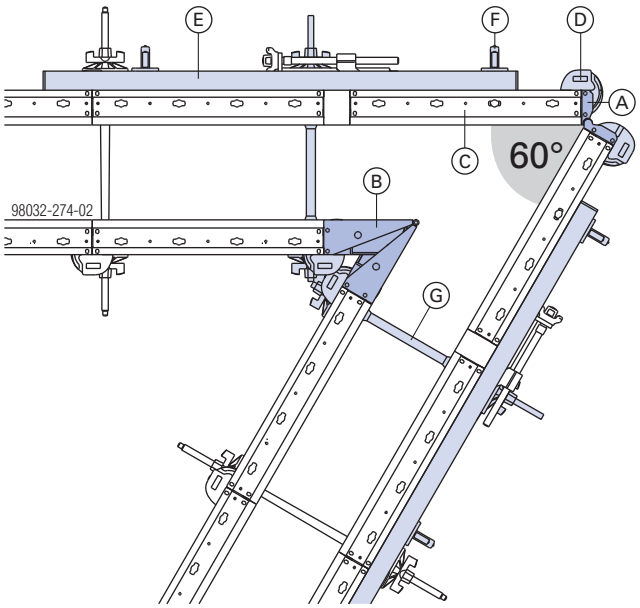
For details regarding extra clamps on outside corners (for increased tensile loads) see "Inter-panel connections for increased tensile loads".

Note:

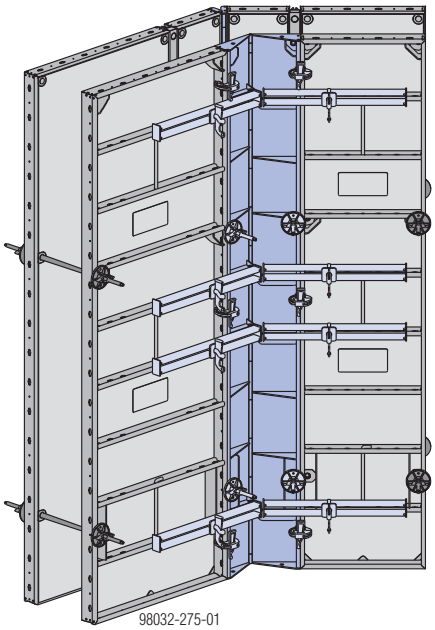
Acute-angled (pointed) corners are tied using the Form-tie system 15.0 (5/8"ø). This makes it possible to form angles of as little as 60°.

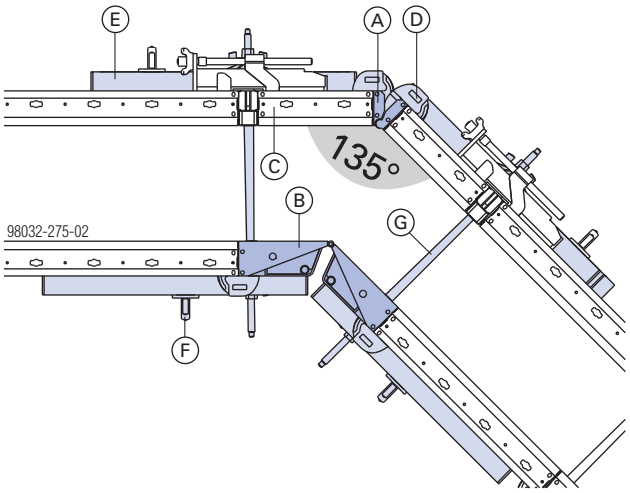
60° - 135° angles, with hinged corners I + A





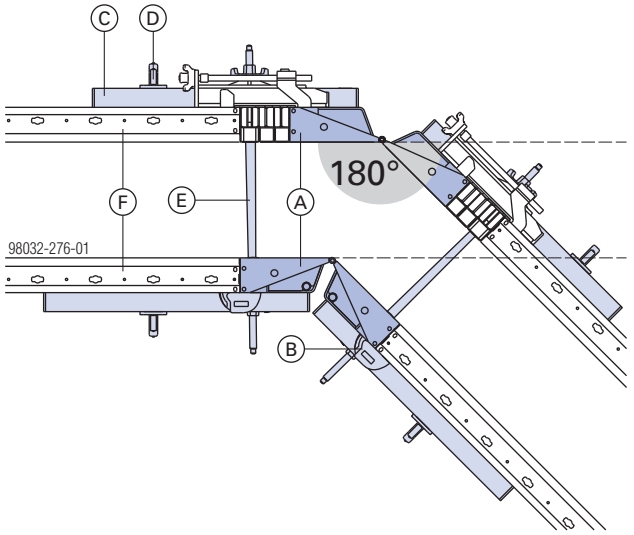
A	Frami S hinged outside corner A
B	Frami S hinged inside corner I
C	Frami S Xlife panel
D	Frami clamp
E	Frami universal waling 1.25m
F	Frami wedge clamp
G	Form-tie





A Frami S hinged outside corner A
B Frami S hinged inside corner I
C Frami S Xlife panel
D Frami clamp
E Frami universal waling
F Frami wedge clamp
G Form-tie

135° - 180° angles, with hinged inside corner I only



A Frami S hinged inside corner I
B Frami clamp
C Frami universal waling
D Frami wedge clamp
E Form-tie
F Frami S Xlife panel

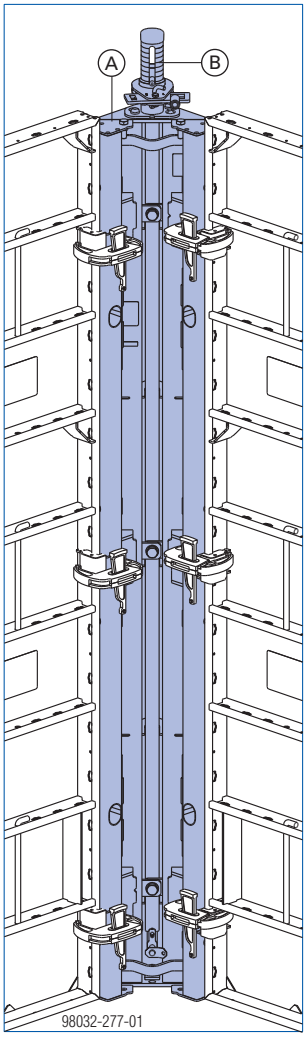
Shaft formwork

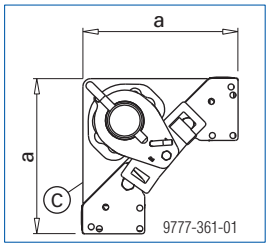
Shaft formwork with Bias-cut corner I

With the **Bias-cut corner I**, the entire shaft formwork unit is detached from the wall, in one piece, before being lifted and reset by crane.

Product features:

- No negative impression in the concrete.
- Formwork set-up and stripping function integrated in the inside corner (no need for crane – uses stripping spindles).
- Entire shaft formwork unit is lifted and reset in one piece (with lifting hooks and four-part lifting chain).





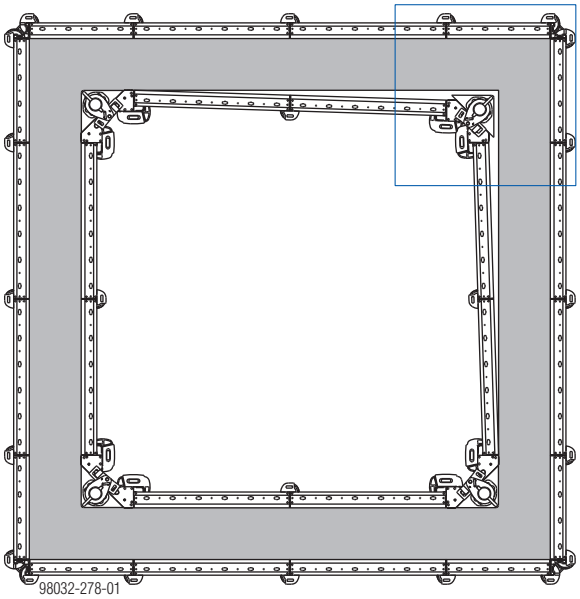
a ... 12" (30 cm)

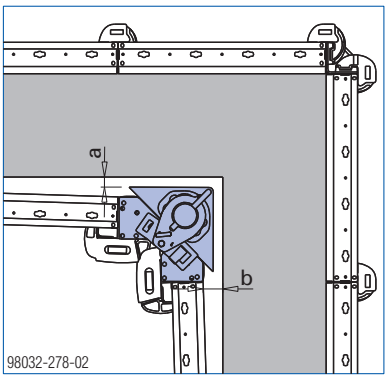
A	Framax S bias cut corner I
B	Framax stripping spindle I with ratchet
C	Steel form-facing

Position of fillers (fitting-timbers) in the inside shaft formwork:

- whenever possible, not directly next to the bias-cut corners

Stripping play:



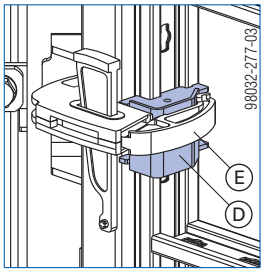


a ... 1 $^1/_8$" (30 mm)
b ... 2 $^1/_4$" (60 mm)

Joining gangs

The Framax bias-cut corner I is joined onto the Frami Xlife panels by means of **Framax quick-acting clamps RU**.

The **difference in thickness between the profiles** is bridged here by the **Frami profile adapter**.



D Frami profile adapter for Bias-cut corner I

E Framax quick-acting clamp RU

Number of Framax quick-acting clamps RU needed:

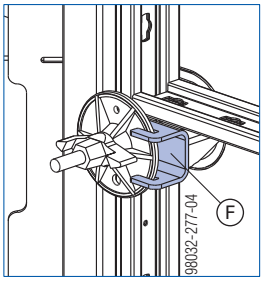
Height of Bias-cut corner I	Panel height	Number of clamps
1.35 m	3'-0"	4
1.35 m	4'-0"	4
2.70 m	6'-0"	6
2.70 m	9'-0"	6

In order to obtain the full available stripping-play, make sure that the Framax quick-acting clamps RU are mounted at staggered heights (i.e. not opposite one another).

Tying the panels

When tying the shaft formwork, the **tie-hole positions of the Frami Xlife panels** should be used.

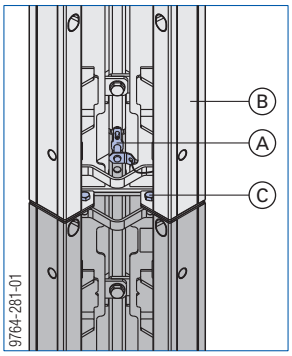
The **difference in thickness between the profiles** is bridged here by the **Frami tie-adapter**.



F Frami tie-adapter for Bias-cut corner I

Vertical stacking of Framax bias-cut corners I

1) Pull out the coupling bolt.
2) Maneuver the Bias-cut corner I into place so that it is flush with the one below it.
3) Push the coupling bolt back in.
4) Bolt the Bias cut corners I together with two hexagonal bolts.



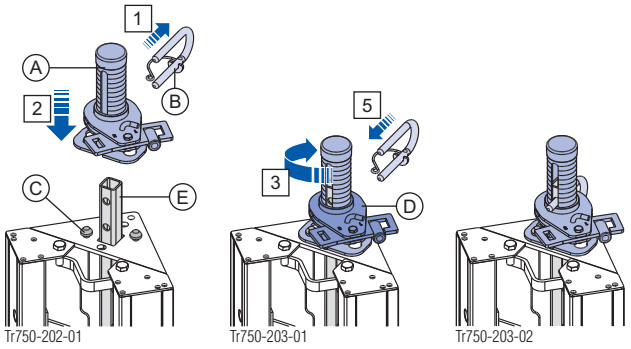
A Coupling bolt

B Bias-cut corner I

C Hexagonal bolt M16x45 (or $^5/_8$ x 1 $^3/_4$")

Mounting the Framax stripping spindle I

1) Pull out the U-bolt from the stripping spindle.
2) Place the stripping spindle on the centering stud of the bias-cut corner.
3) Twist the stripping spindle clockwise until fully engaged.
4) Position the ratchet between the holes in the push-rod.
5) Fix the stripping spindle with the U-bolt.



A Framax stripping spindle I with ratchet

B U-bolt

C Centering stud of bias-cut corner

D Ratchet

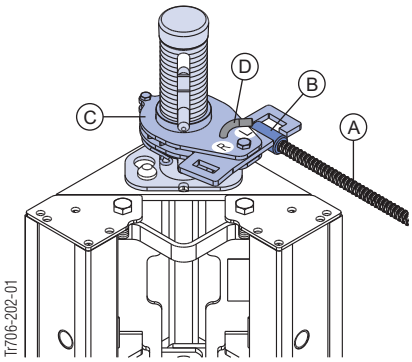
E Push-rod

Operating the Framax stripping spindle I with ratchet

➤ Screw a Tie-rod 15.0mm into the Weldable coupler 15.0 of the ratchet.

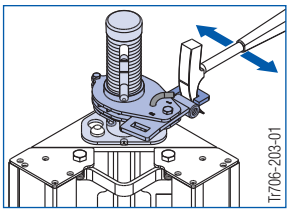
➤ **Setting up**:
- shift the change-over lever into the "**L**" position
- turn the ratchet **clockwise**.

➤ **Stripping**:
- shift the change-over lever into the "**R**" position
- turn the ratchet **anti-clockwise**.



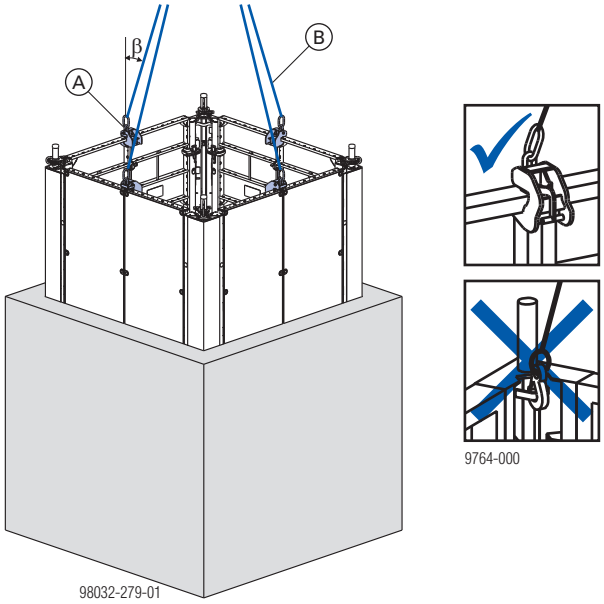
A Tie-rod 15.0mm
B Weldable coupler 15.0
C Ratchet
D Change-over lever

You can also use a **formwork hammer** to operate the ratchet, instead of a Tie-rod 15.0mm.



Resetting by crane

Resetting by crane:



β ... max. 15°

A Frami lifting hook
B Four-part lifting chain (e.g. Doka 4-part chain 3.20m)

The crane hook on the Bias-cut corner I is not allowed to be used for lifting the shaft formwork.

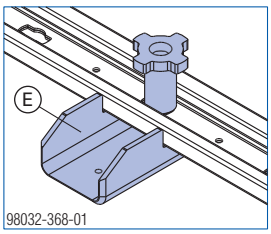
➤ The shaft formwork may **only be reset using lifting hooks**.

Permitted weight of the shaft formwork:
4400 lbs (2000 kg) with 4 Frami lifting hooks

Doka shaft platform

With its telescopic shaft beams, this platform can accommodate any dimension of structure. The inside formwork can be "parked" on the platform and repositioned together with the platform.

The Frami panel shoe provides increased stability on shaft platforms.



E Frami panel shoe

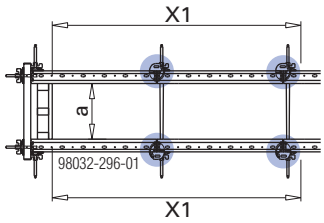
Follow the directions in the "Doka shaft platform" User Information booklet.

Inter-panel connections for increased tensile loads

As a basic rule, only **3 clamps are needed per 9'-0" panel height**, and **2 clamps per 6'-0", 4'-0" and 3'-0" panel height**, as tension links between the panels.
However, where **increased tensile loads** need to be sustained, especially near outside corners and bulkheads, **extra clamps are needed**.

Near bulkheads

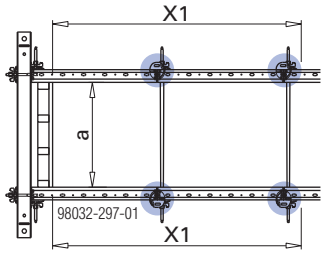
for wall thicknesses from 16" to 24" (40 to 61 cm)



a ... 16" to 24" (40 to 61 cm)

	Number of clamps
Panel height	In zone **"X1"** (panel joints **within 6'-0" (1.8 m)** of a bulkhead)
9'-0"	3 **+ 1**
6'-0"	2 **+ 1**
4'-0"	2
3'-0"	2

for wall thicknesses of over 24" and up to 30" (61 cm and up to 76 cm)

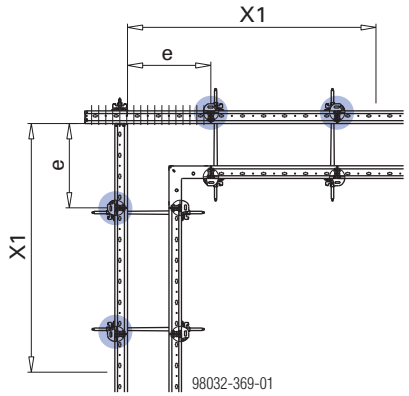


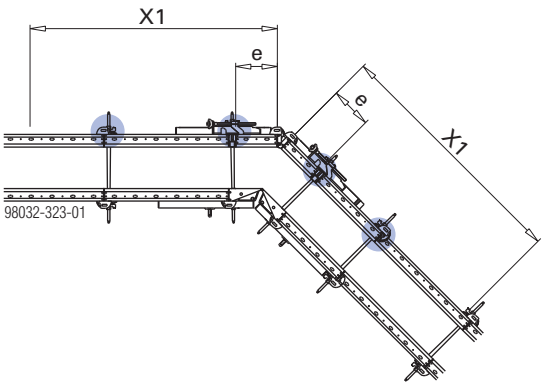
a ... up to 30" (76 cm)

	Number of clamps
Panel height	In zone **"X1"** (panel joints **up to 6'-0" (1.8 m)** away from a bulkhead)
9'-0"	3 **+ 2**
6'-0"	2 **+ 1**
4'-0"	2
3'-0"	2

Near outside corners

for panel widths up to 2’-0"

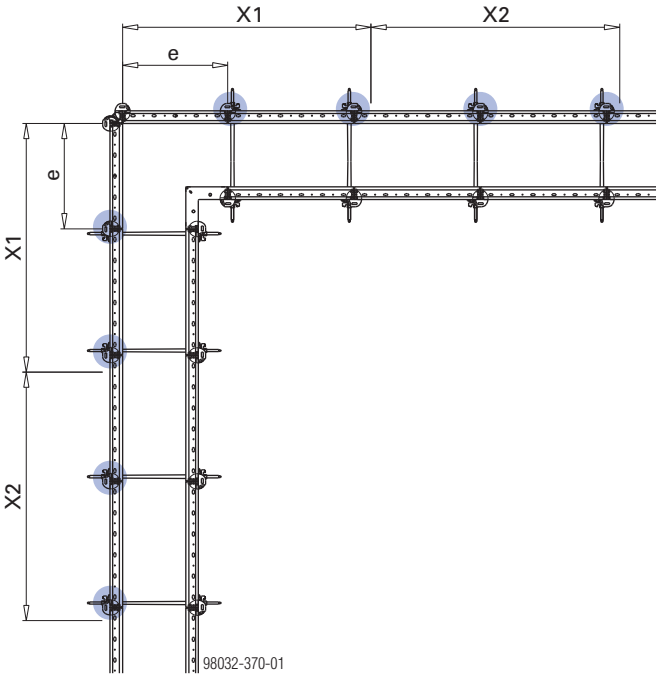


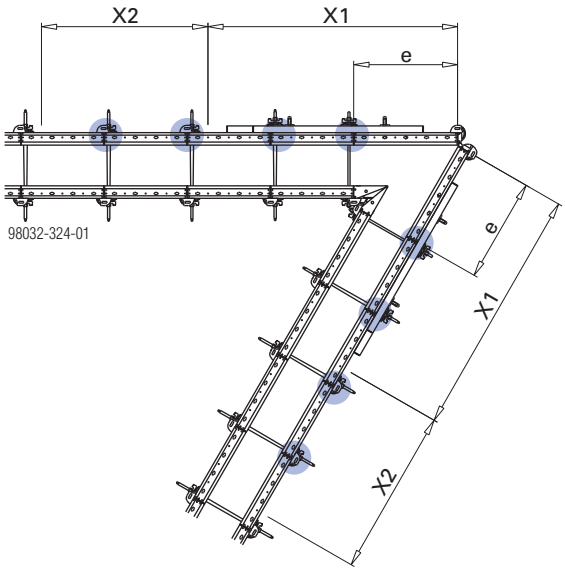


e ... up to 2’-0" (panel width)

	Number of clamps
Panel height	In zone **"X1"** (panel joints **within 6’-0" (1.8 m)** of an outside corner)
9’-0"	3 **+ 1**
6’-0"	2 **+ 1**
4’-0"	2
3’-0"	2

for panel widths over 2’-0" and up to 3’-0"

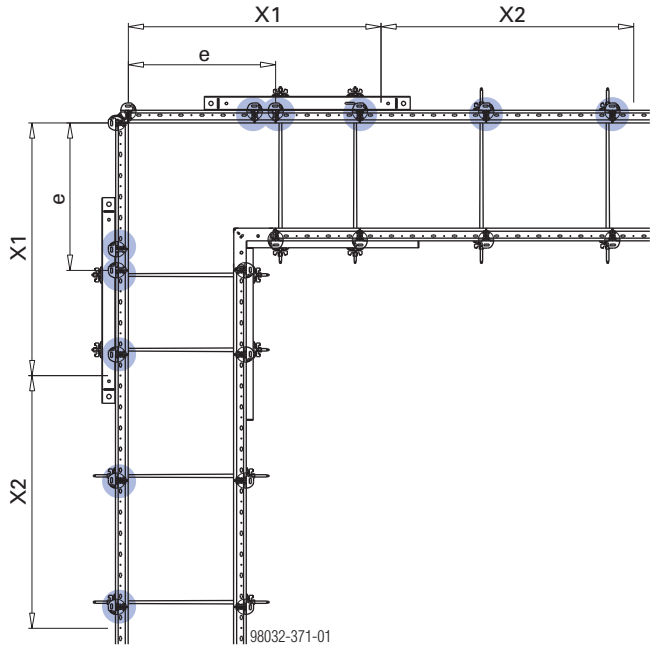




e ... > 2’-0" up to 3’-0" (panel width)

	Number of clamps	
Panel height	In zone **"X1"** (panel joints **within 6’-0" (1.8 m)** of an outside corner)	In zone **"X2"** (panel joints **6’-0" to 10’-0" (1.8 to 3.0 m)** from an outside corner)
9’-0"	3 **+ 3**	3 **+ 1**
6’-0"	2 **+ 2**	2 **+ 1**
4’-0"	2 **+ 1**	2
3’-0"	2	2

for panel widths of over 3’-0" and up to 3’-6"



e ... > 3’-0" up to 3’-6" (panel width)

	Number of clamps	
Panel height	In zone **"X1"** (panel joints **up to 6’-0" (1.8 m)** away from an outside corner)	In zone **"X2"** (panel joints **between 6’-0" and 10’-0" (1.8 to 3.0 m)** away from an outside corner)
9’-0"	3 **+ 3**	3 **+ 2**
6’-0"	2 **+ 2**	2 **+ 1**
4’-0"	2 **+ 1**	2
3’-0"	2	2

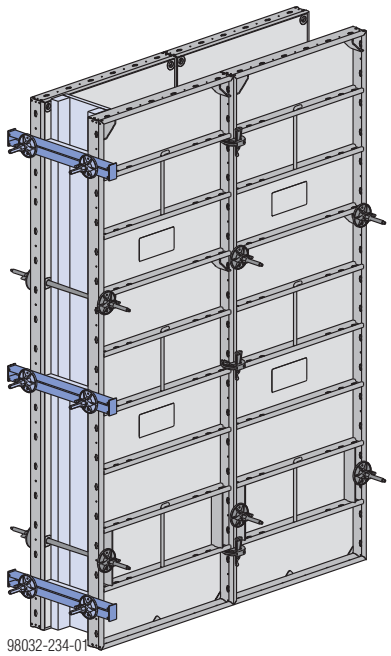
Bulkhead formwork

There are **3 possible ways** of forming **bulkheads**:

- with Universal walings
- with an Xlife universal panel and an outside corner
- with an Xlife panel and an outside corner

with Universal walings

The Universal waling makes it possible to form bulkheads continuously across any thickness of wall. The Universal walings are mounted using Universal fixing bolts 5-12cm and Super-plates 15.0.



Frami universal fixing bolt:

Permitted tensile load:

2.92 kip (13.0 kN) when used in the Xlife panel

3.51 kip (15.6 kN), when used in the Xlife universal panel

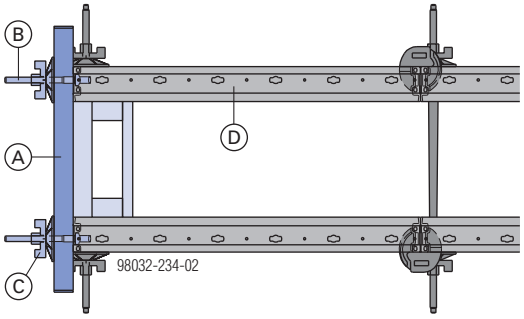
Frami universal waling:

Permitted moment: 0.96 kip-ft (1.3 kNm)

Framax S universal waling:

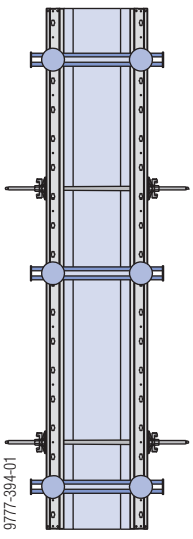
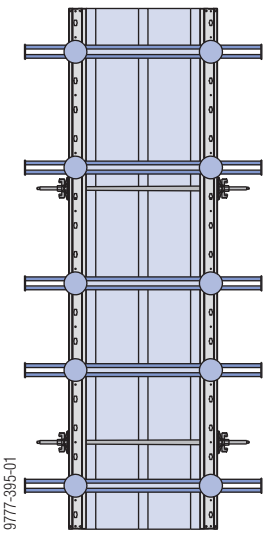
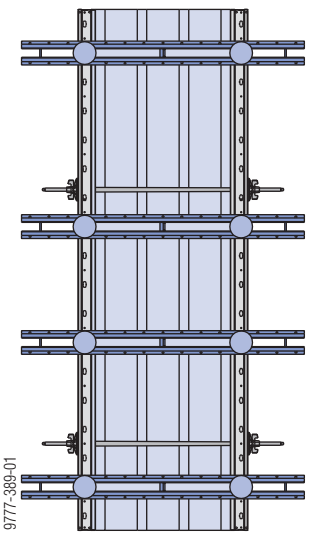
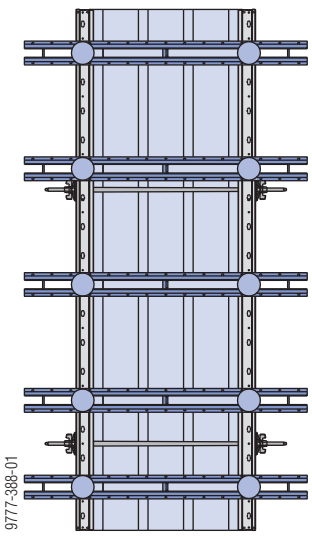
Permitted moment: 3.85 kip-ft (5.2 kNm)

For details regarding extra clamps on bulkheads (for increased tensile loads) see "Inter-panel connections for increased tensile loads".



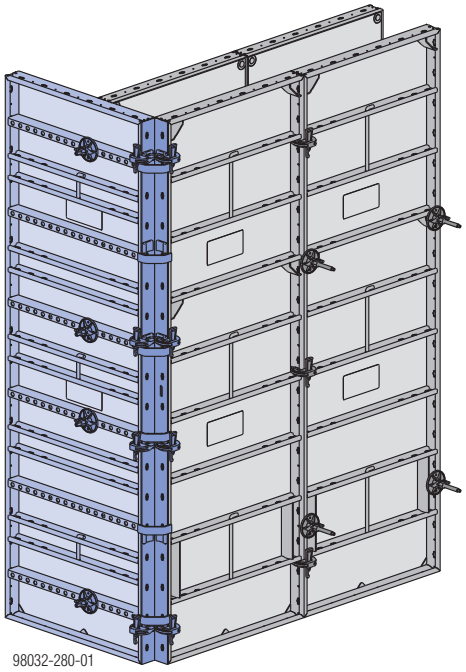
A	Frami universal waling or Framax S universal waling
B	Universal fixing bolt 5-12cm
C	Super-plate 15.0
D	Frami S Xlife panel > 6"
E	Form-tie

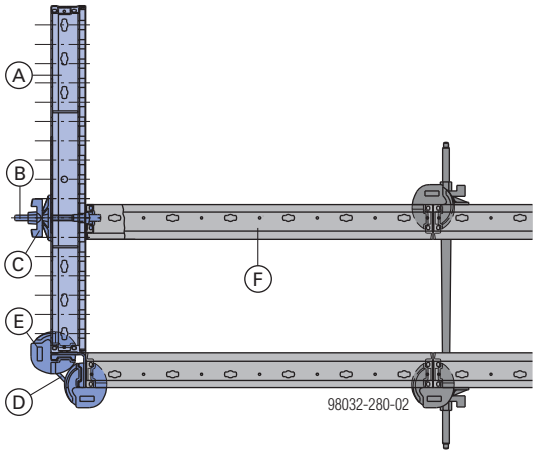
Positioning the Universal walings where the formwork height is 9'-0" (2.74 m):

Walls up to **16" (40 cm) thick**	Walls up to **24" (61 cm) thick**	Walls up to **28" (71 cm) thick**	Walls up to **30" (76 cm) thick**
3 Frami universal walings	5 Frami universal walings	4 Framax S universal walings	5 Framax S universal walings
			

with an Xlife universal panel and an outside corner

The continuous hole grid on the Universal panels makes it possible to form bulkheads in 2" (5.1 cm) increments.





A Frami S Xlife universal panel
B Frami universal fixing bolt 5-12cm
C Super-plate 15.0
D Frami S outside corner
E Frami clamp
F Frami S Xlife panel

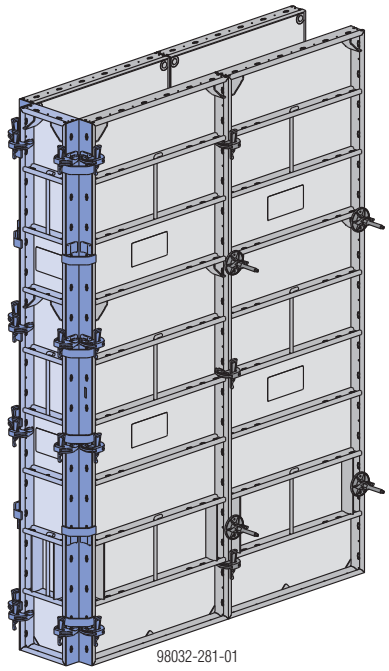
Required numbers of connectors:

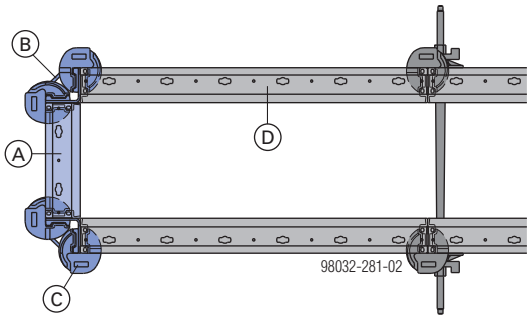
Panel height	Universal fixing bolt + Super-plate	Frami clamp
3'-0"	2	4
4'-0"	2	4
6'-0"	3	6
9'-0"	4	8

The values given here apply up to a wall thickness of 24" (61 cm).

with an Xlife panel and an outside corner

For walls whose thickness corresponds exactly to the panel width.





A Frami S Xlife panel
B Frami S outside corner
C Frami clamp

Required numbers of Frami clamps per bulkhead:

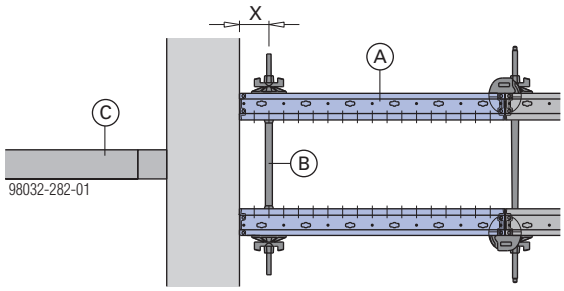
Panel height	Frami clamp
3'-0"	8
4'-0"	8
6'-0"	12
9'-0"	16

The values given here apply up to a wall thickness of 24" (61 cm).

Wall junctions

Right-angled connections

with an Xlife universal panel:

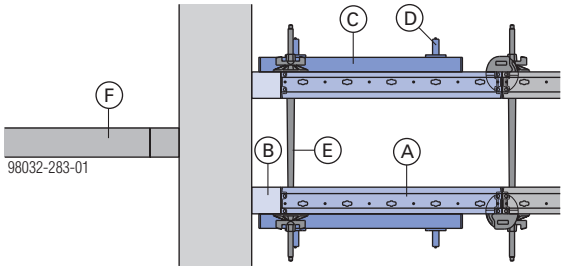


A Frami S Xlife universal panel
B Tie-rod 15.0mm
C In-place timber brace

Number of form-ties:

Form-tie position **X**	Xlife universal panel			
	3'-0"	4'-0"	6'-0"	9'-0"
Up to 6" (15 cm)	2	2	3	4
Up to max. 10" (25 cm)	2	2	4	6

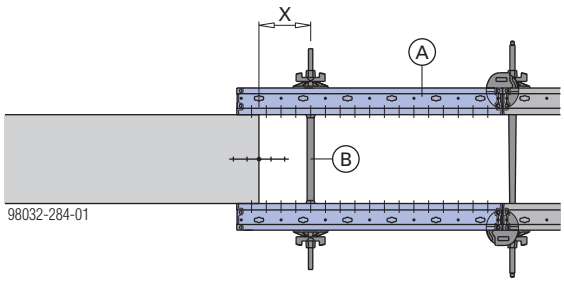
with Xlife panel and dimensional lumber:



A Frami S Xlife panel
B Dimensional lumber, max. 4" (10 cm)
C Universal waling – not needed if the squared timber is less than 2" (5 cm) wide
D Frami wedge clamp
E Form-tie
F In-place timber brace

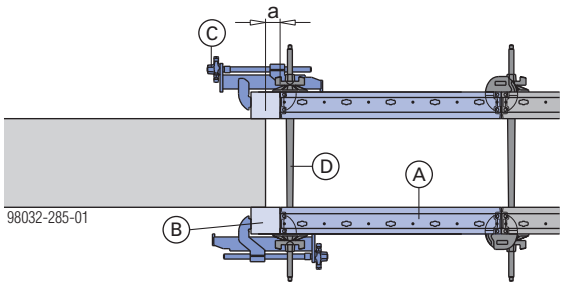
In-line connections

with an Xlife universal panel:



A Frami S Xlife universal panel
B Tie-rod 15.0mm

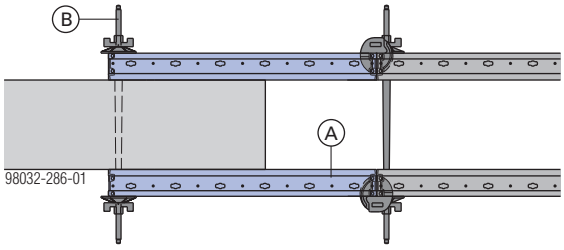
with Xlife panel and dimensional lumber:



a ... max. 2" (5 cm)

A Frami S Xlife panel
B Dimensional lumber
C Adjustable clamp
D Form-tie

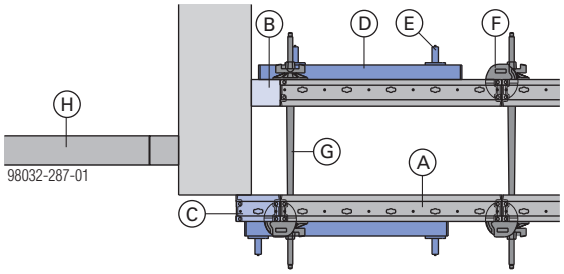
with an Xlife panel from the previous casting section:



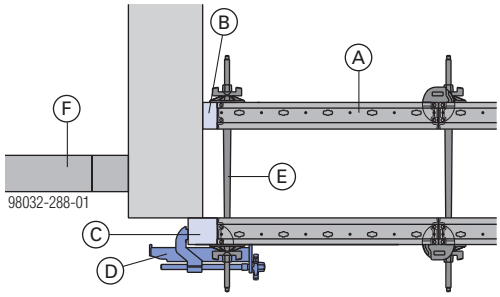
A Frami S Xlife panel
B Form-tie

Corner connections

with Xlife panel and dimensional lumber:



A Frami S Xlife panel
B Dimensional lumber, max. 4" (10 cm)
C Frami S Xlife panel 6"
D Universal walings – not needed if the squared timber is less than 2" (5 cm) wide
E Frami wedge clamp
F Frami clamp
G Form-tie
H In-place timber brace



A Frami S Xlife panel
B Dimensional lumber, max. 2" (5 cm)
C Dimensional lumber
D Adjustable clamp
E Form-tie
F In-place timber brace

Vertical stacking of panels

Positions of the interconnecting and form-tie components and accessories needed for:

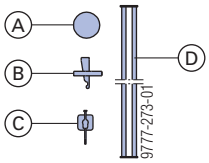
- lifting and setting down
- crane-handling
- platform loads
- pouring

Follow the directions in the section headed "Form-tie system".

Note:
When panels are vertically stacked, the arrows point upward.

Frami clamp:
Permitted tensile force: 2.245 kip (10.0 kN)
Permitted shear force: 1.12 kip (5.0 kN)
Permitted moment: 0.15 kip-ft (0.20 kNm)

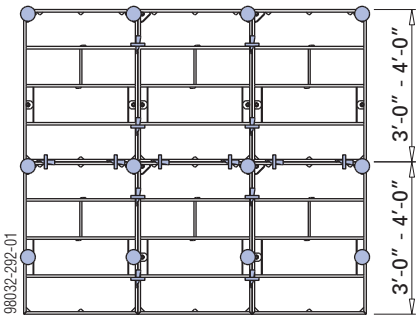
Frami universal waling:
Permitted moment: 0.96 kip-ft (1.3 kNm)



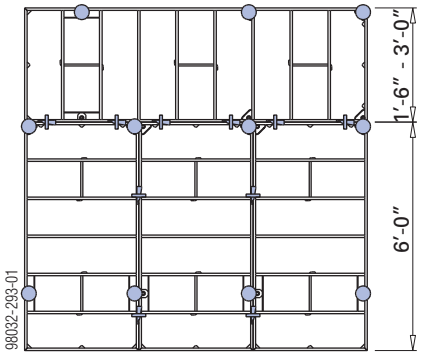
A	Tie-rod + Super-plate 15.0
B	Frami clamp
C	Frami wedge clamp
D	Frami universal waling 1.25m

Important note:
Do not oil or grease wedge-clamped joints.

Formwork height:
6'-0" to 8'-0" (183 to 244 cm)

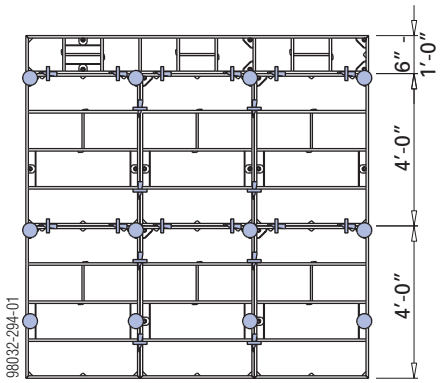


Formwork height:
7'-6" to 9'-0" (228 to 274 cm)

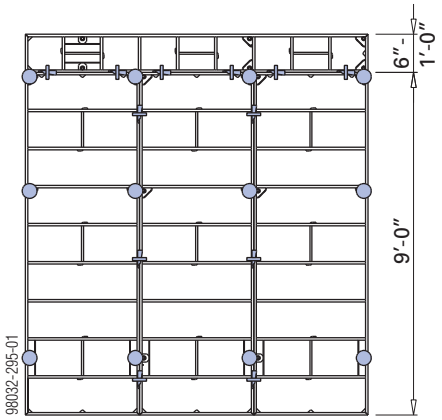


Stack max. 3'-0" on top of one 6'-0" high basic panel!

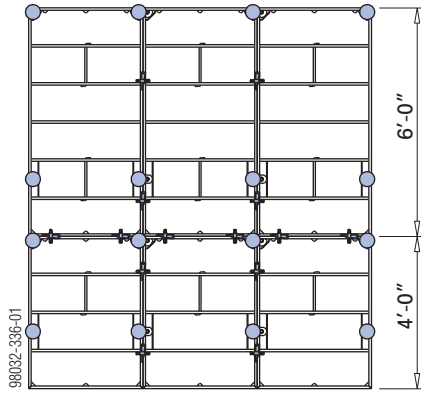
Formwork height:
8'-6" and 9'-0" (259 and 274 cm)



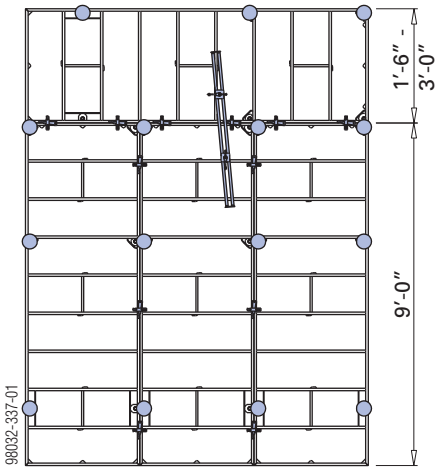
Formwork height:
9'-6" and 10'-0" (289 and 305 cm)



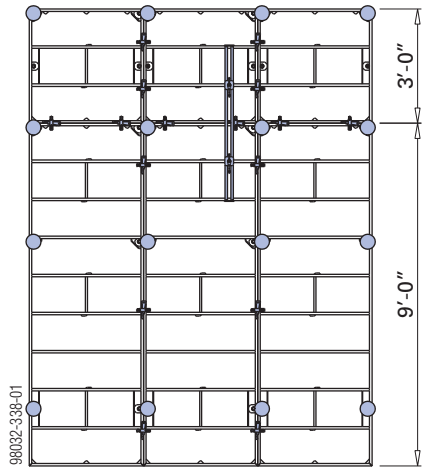
Formwork height: 10’-0" (305 cm)



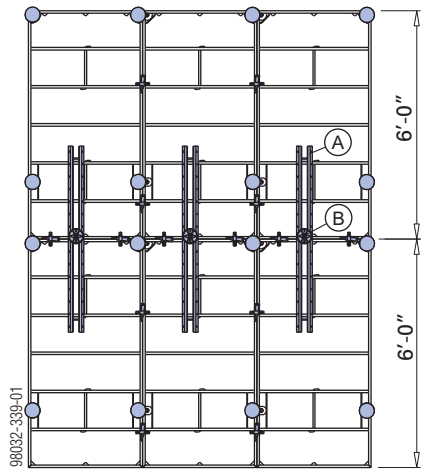
Formwork height: 10’-6" to 12’-0" (320 to 365 cm)



Formwork height: 12’-0" (365 cm)



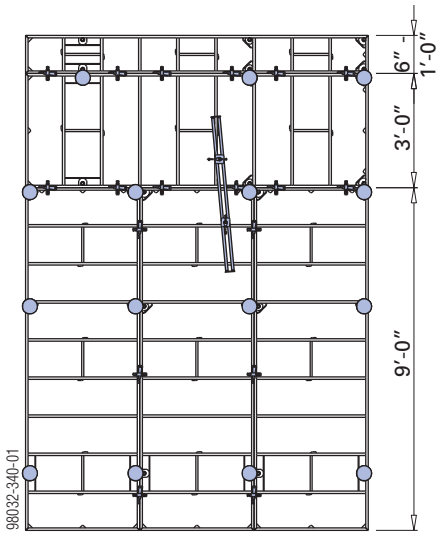
Formwork height: 12’-0" (365 cm)



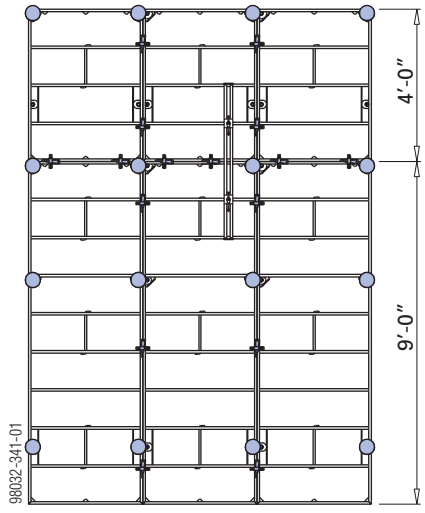
A Framax S universal waling 1.50m

B Frami profile connector 5-18cm + Super plate 15.0

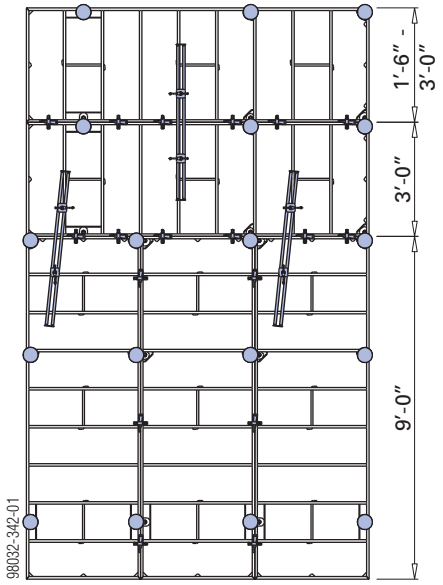
Formwork height: 12’-6" and 13’-0" (381 and 396 cm)



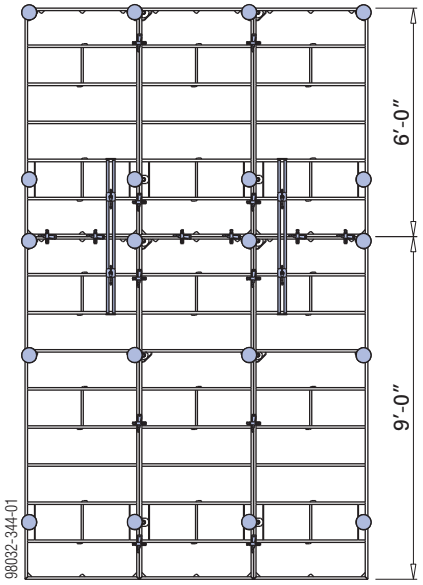
Formwork height: 13’-0" (396 cm)



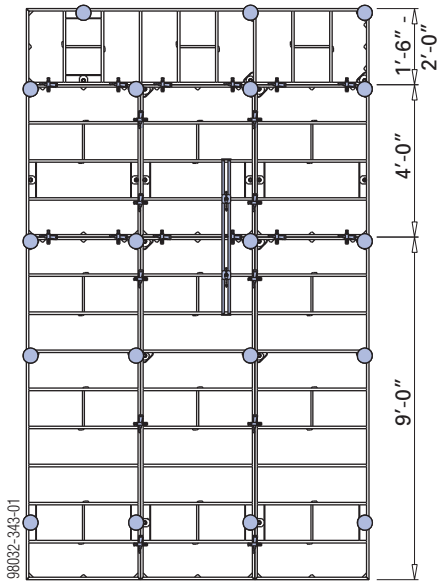
Formwork height:
13’-6" to 15’-0" (411 to 457 cm)



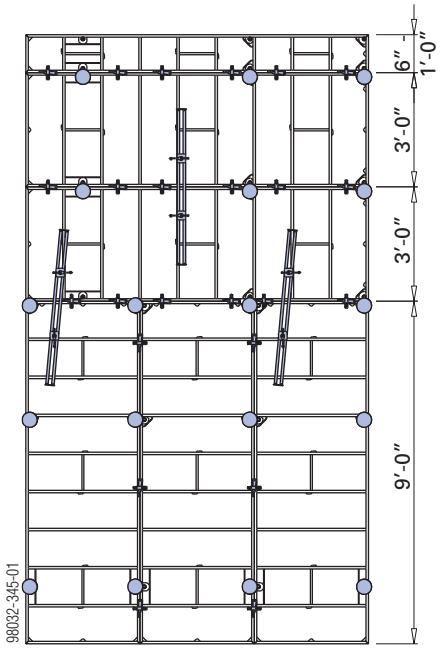
Formwork height:
15’-0" (457 cm)



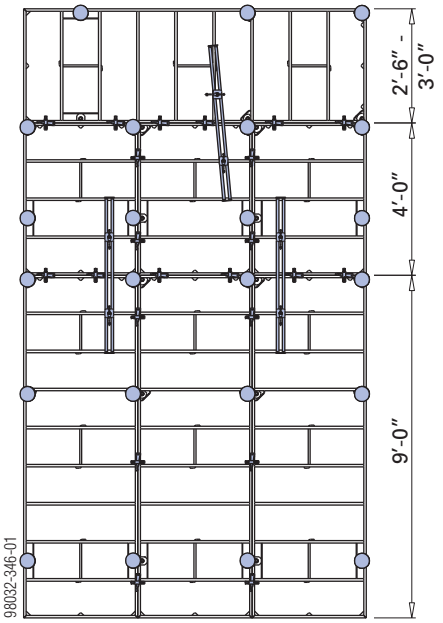
Formwork height:
14’-6" and 15’-0" (442 and 457 cm)



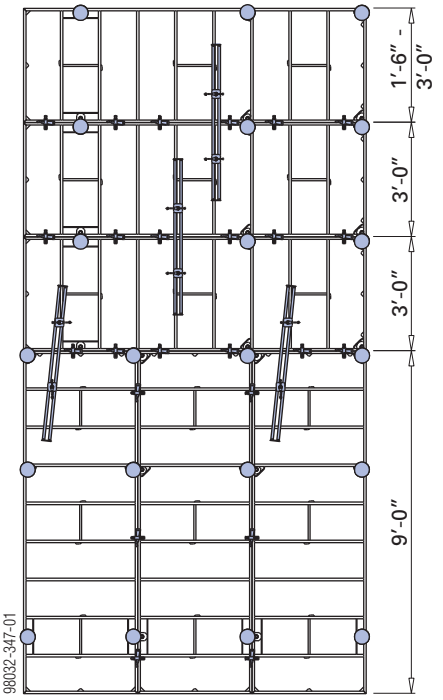
Formwork height:
15’-6" and 16’-0" (472 and 487 cm)



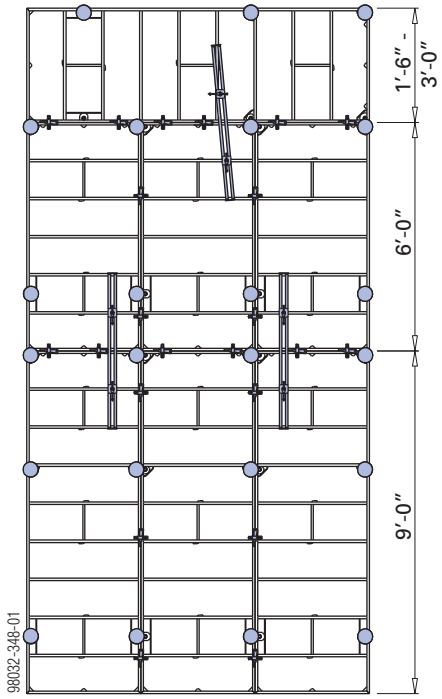
Formwork height:
15’-6" and 16’-0" (472 and 487 cm)



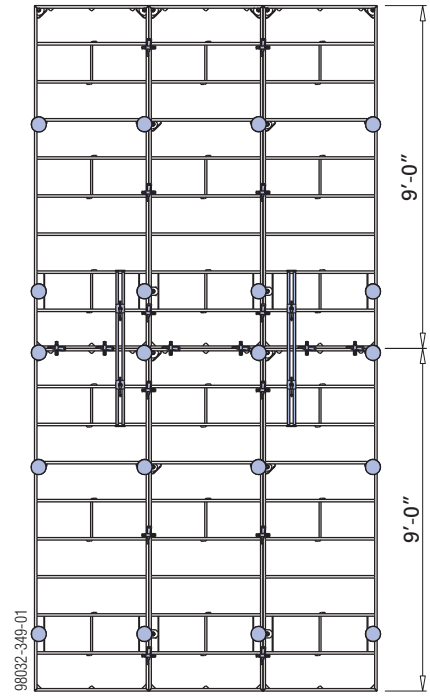
Formwork height:
16’-6" to 18’-0" (503 to 548 cm)



Formwork height:
16’-6" to 18’-0" (503 to 548 cm)

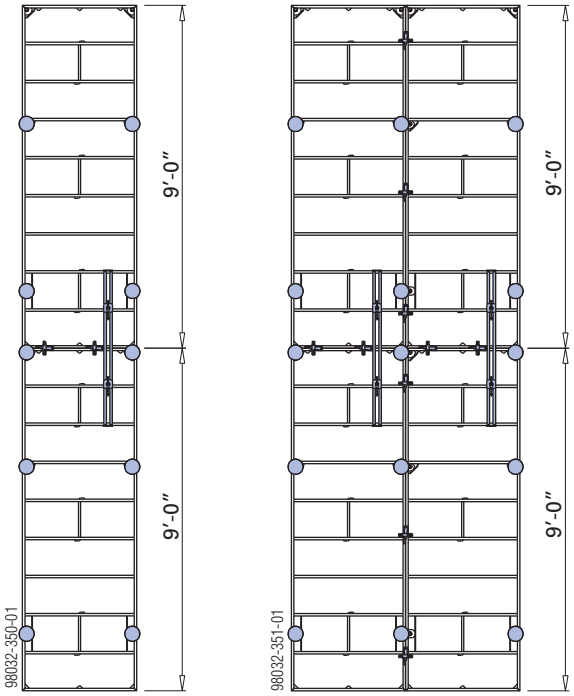


Formwork height:
18’-0" (548 cm)



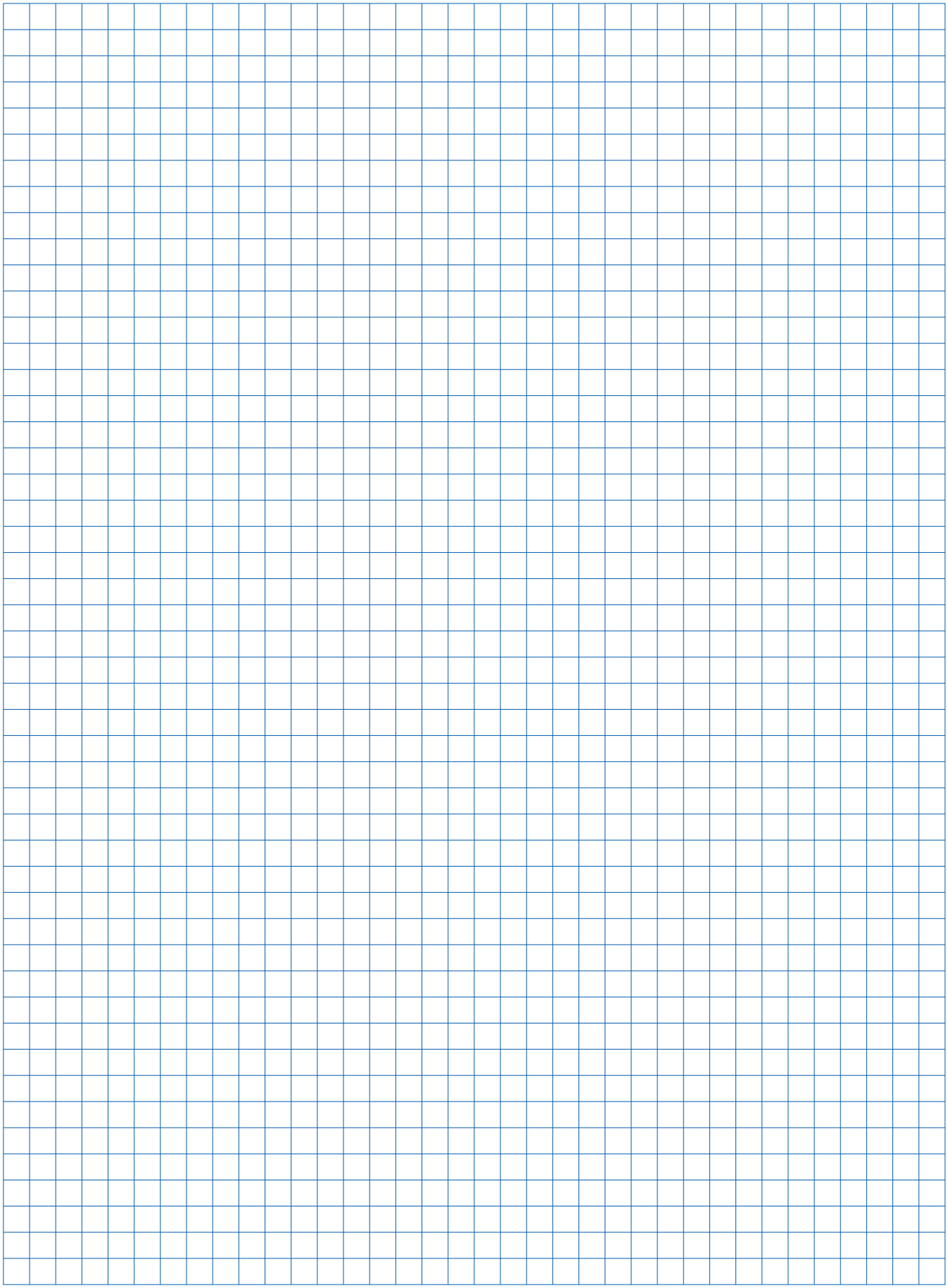
Note:

When adding narrow gangs, observe the following rules for vertical stacking of panels:

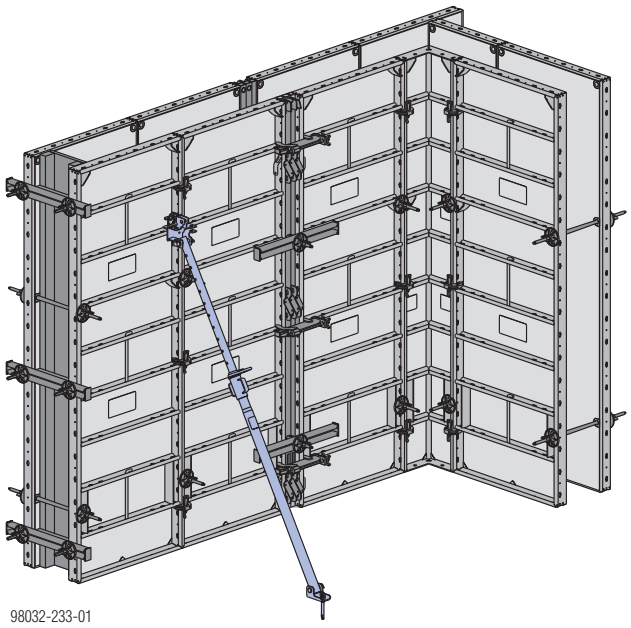


The illustrations given here show the most economical solutions for each formwork height.

Other combinations require correspondingly more connector components.



Plumbing accessories



The Frami plumbing strut 260, Struts 340 / 540, and the Pipe brace 12'-0"-21'-0", ensure that the formwork remains stable against wind loads, and make it easier to plumb and align the formwork.

Important note:

The formwork gangs must be securely braced in **every** phase of the construction work!

Observe all applicable safety rules!

CAUTION

There is a risk of the formwork tipping over **in high winds**.

➤ If high wind speeds are likely, and when work finishes for the day or before prolonged work-breaks, always take extra precautions to fix the formwork in place.

Suitable precautions:

- set up the opposing formwork
- place the formwork against a wall
- anchor the formwork to the ground

Permitted spacing of the struts:

Formwork height	Panel strut	Permitted spacing
6'-0" (1.83 m)	Plumbing strut 260	12'-0" (3.66 m)
9'-0" (2.75 m)	Plumbing strut 260	
12'-0" (3.66 m)	Strut 340	
15'-0" (4.57 m)	Strut 540 or Pipe brace 12'-0"-21'-0"	
18'-0" (5.48 m)	Strut 540 or Pipe brace 12'-0"-21'-0"	10'-6" (3.23 m)
Max. anchoring load: 3.0 kip (13.5 kN)		

Values apply up to a wind pressure of 10 psf (0.48 kN/m²). In cases where higher wind pressure is encountered, the number of props must be determined by statical calculation.

Values apply to all panel struts in conjunction with the Frami S prop head or the Frami S connection profile.

Note:

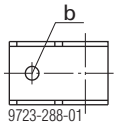
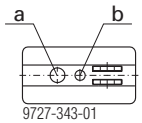
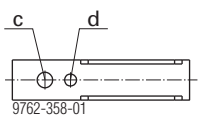
Every gang-form must be supported by **at least 2 panel struts**.

For more information (wind loads etc.) see the section headed "Vertical and horizontal loads" in the Doka Calculation Guide.

Fixing to the floor

➤ Anchor the plumbing accessories in such a way as to resist tensile and compressive forces!

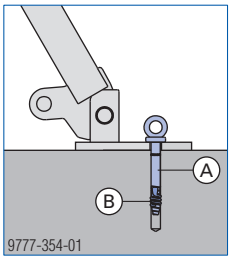
Boreholes in the footplates

Plumbing strut 260	Struts 340 / 540	Pipe brace 12'-0"-21'-0"
		

a ... 1"ø (26 mm)
b ... $^{11}/_{16}$"ø (18 mm)
c ... 1 $^{1}/_{16}$"ø (27 mm)
d ... $^{13}/_{16}$"ø (20 mm)

Anchoring the footplate

The **Doka Express anchor** can be re-used many times over - the only tool needed for screwing it in is a centering fork-wrench or a rebar.



A Doka Express anchor 16x125mm
B Doka coil 16mm

Cylinder compressive strength of concrete: min. 3,000 psi (20 N/mm²)

Follow the Fitting Instructions!

Required safe working load of alternative anchor for foot-plates: min. 3.0 kip (13.5 kN)

Follow the manufacturer's applicable fitting instructions.

The rule-of-thumb here is:

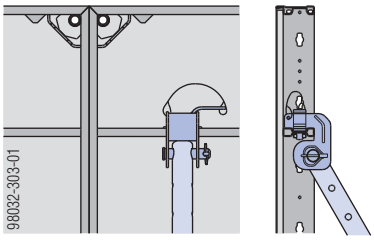
The length of the struts or pipe-braces should be the same as the height of the panel to be supported.

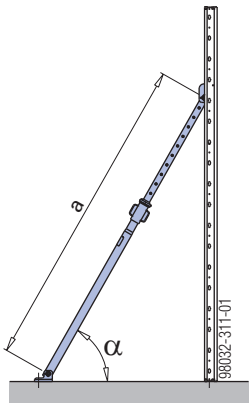
➤ Use the nail-holes to fasten the panels to the ground or sills.

Plumbing strut 260

Fixing the struts to the formwork

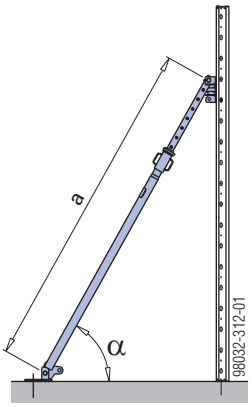
➤ Fix the Plumbing strut into the cross boreholes in the **cross profiles (frame profiles) with a pin**.





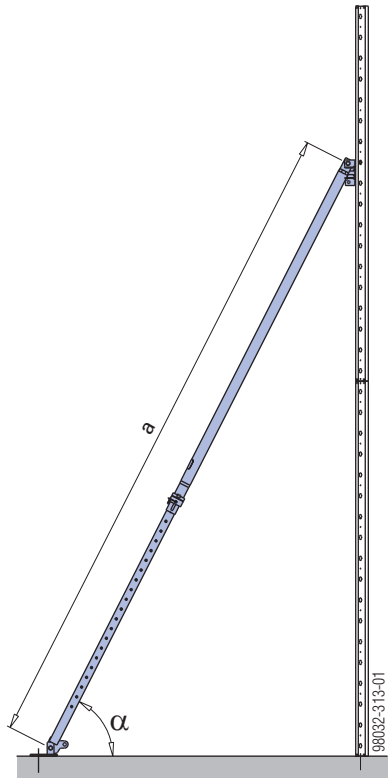
a ... min. 4’-9" - max. 8’-6" (min. 147 - max. 257 cm)
α ... approx. 60°

Strut 340



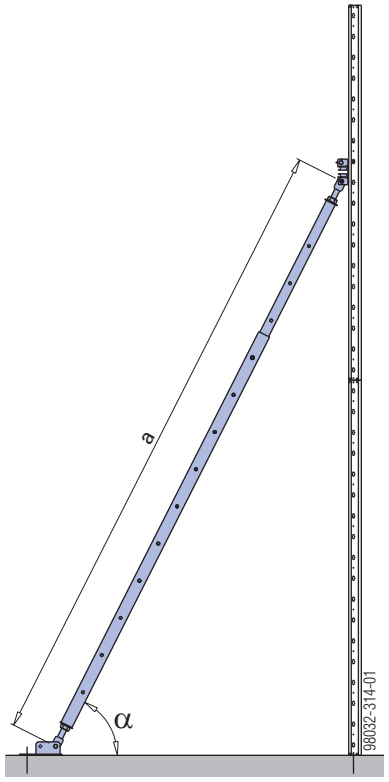
a ... min. 6’-4" - max. 11’-2" (min. 191 - max. 342 cm)
α ... approx. 60°

Strut 540



a ... min. 10’-2" - max. 18’-0" (min. 310 - max. 549 cm)
α ... approx. 60°

Pipe brace 12’-0"-21’-0"



a ... min. 12’-0" - max. 21’-0" (min. 366 - max. 640 cm)
α ... approx. 60°

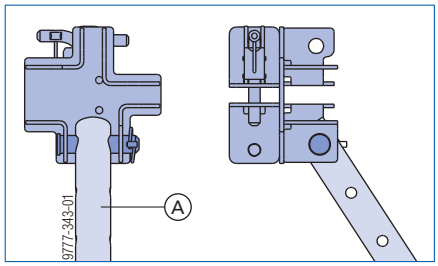
Fixing the struts to the formwork

with Frami S bracing head

The Frami S bracing head allows bracing to be attached to the frame profile.

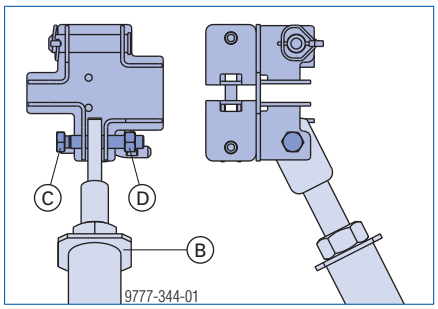
Fixing the Frami S bracing head to Struts 340 / 540 (A)

➤ Attach the Frami S bracing head to the strut with the included bolt and spring cotter.



Fixing the Frami S bracing head to the Pipe brace 12’-0"-21’-0" (B)

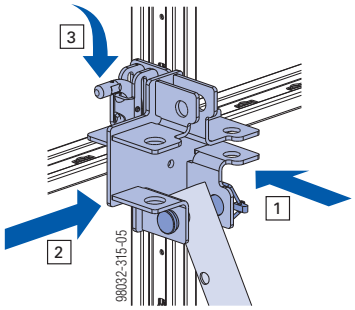
➤ Attach the Frami S bracing head to the pipe brace using a speed bolt and speed nut.



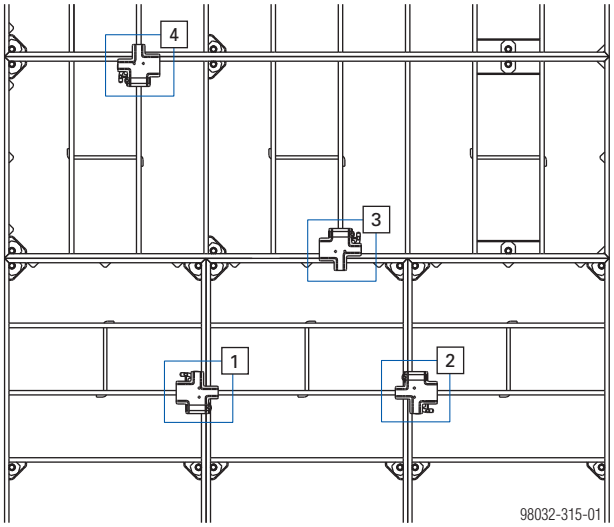
A	Strut 340 / 540
B	Pipe brace 12’-0"-21’-0"
C	Speed bolt 3/4"x4"
D	Speed nut 3/4"

Attaching the Frami S bracing head to the frame profile

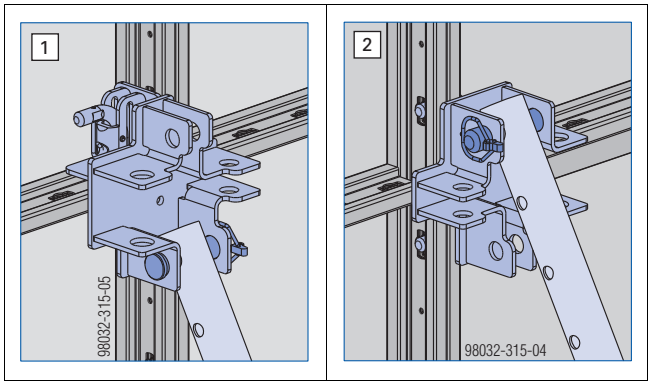
1) Place the bracing head onto an empty cross profile.
2) Slide the bracing head until it is flush with the frame profile.
   The stud-pins will slide into the cross boreholes of the frame profiles.
3) Push the U-bolt to secure the head in place.



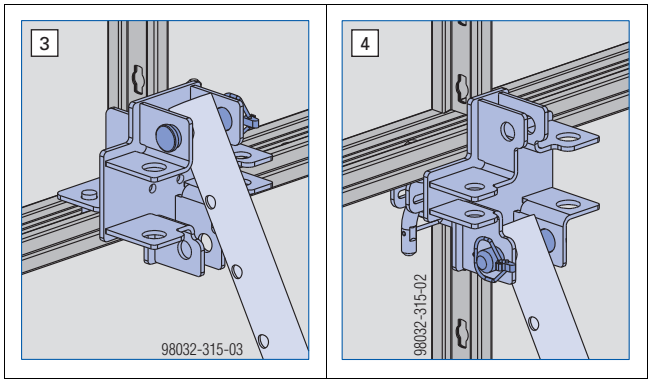
Possible connection points on vertically and horizontally placed panels



On a vertically placed panel



On a horizontally placed panel



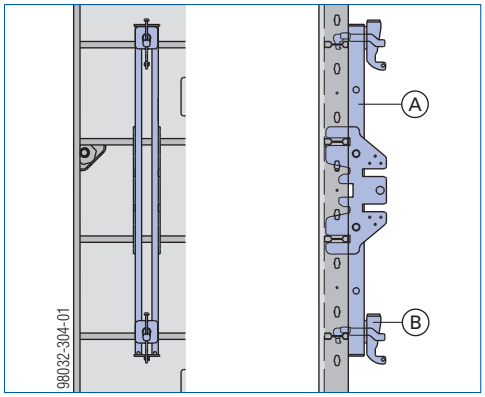
with Frami S connection profile

This connection method is used on column formwork, circular formwork and wherever it is not possible to attach the Frami S bracing head to the frame profile.

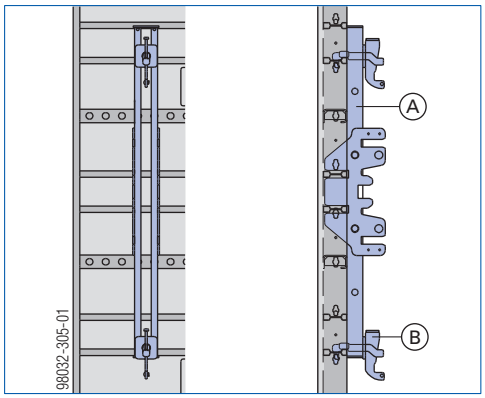
The Connection profile is suitable for use on standard Xlife panels and Xlife universal panels.

➤ Use Frami wedge clamps to fasten the Frami S connection profile in the cross boreholes of the **cross-profiles or frame profiles**.

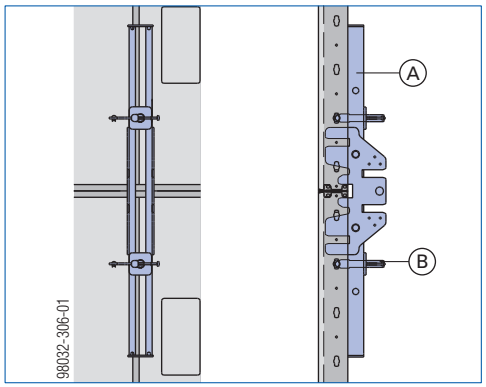
On standard Xlife panels



On Xlife universal panels



On the panel joint (stacked horizontally)



A Frami S connection profile

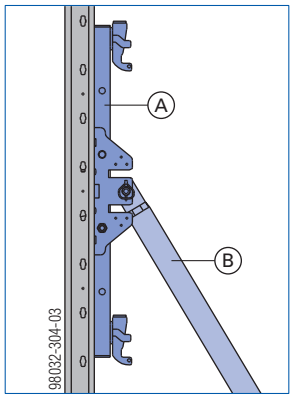
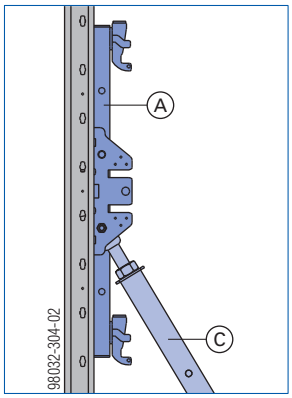
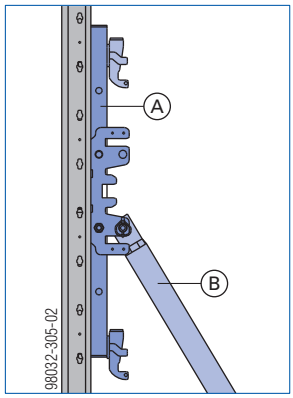
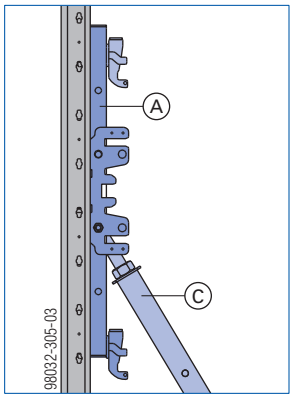
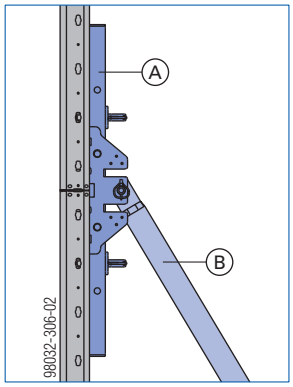
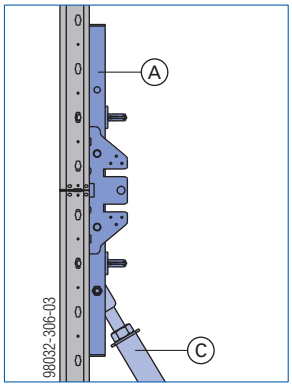
B Frami wedge clamp

Attaching the struts to the Frami S connection profile

On the Frami S connection profile there are connection points for the Pipe brace 12’-0"-21’-0" and for the Struts 340 / 540.

➤ Guide the Pipe brace 12’-0"-21’-0" to the relevant connection point and fix it in place with a speed bolt and speed nut.

➤ If using Struts 340 / 540, attach the Frami S connection profile with a bolt and a spring cotter.

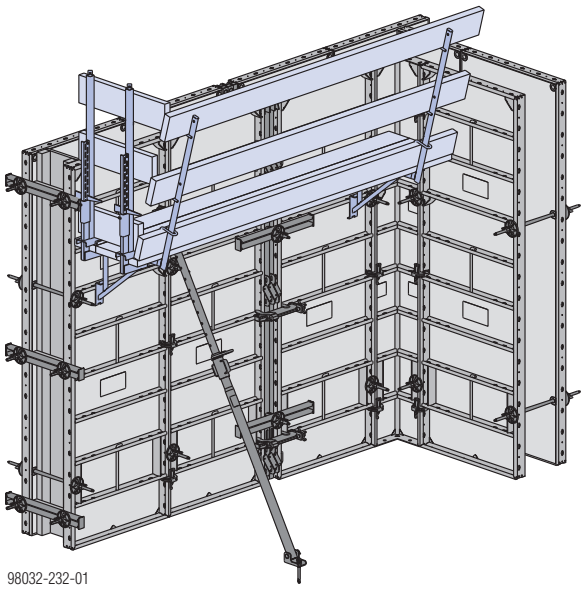
Strut 340 / 540	Pipe brace 12’-0" - 21’-0"
On standard Xlife panels	
	
On Xlife universal panels	
	
On the panel joint (stacked horizontally)	
	

A Frami S connection profile

B Strut 340 / 540

C Pipe brace 12’-0"-21’-0"

Pouring platforms with single brackets


98032-232-01

The Frami brackets 60 enable you to assemble pouring platforms that can easily be mounted by hand.

Preconditions for use:

Only fix the pouring platform onto formwork constructions that are sufficiently stable to transfer the expected loads.

Also brace the formwork in a windproof manner when erecting it and when it is temporarily "parked" in the standing position.

Ensure that the formwork gang has sufficient stiffness.

Observe all applicable safety rules.

with Frami bracket 60

The Frami bracket 60 is a "use-anywhere" bracket for making pouring platforms
(platform width 2'-0" (60 cm)).

Note:
The scaffold planks and guard-rail material shall meet or exceed any local, state, provincial or national regulations.

Plank thicknesses for support centers of up to 6'-6" (2.00 m):

- 2 scaffold planks 2 x 10, min. 1 1/2 x 9 1/2" (4 x 24 cm)
- 1 scaffold plank 2 x 6, min. 1 1/2 x 5 1/2" (4 x 14 cm)
- 2 guard-rail planks 2 x 4, min. 1 1/2 x 3 1/2" (4 x 9 cm)
- 1 guard-rail plank 2 x 6, min. 1 1/2 x 5 1/2" (4 x 14 cm) (toe-board)

Fastening the scaffold planks:
with 3 carriage bolts 3/8-16 x 4 3/4 (cup square screws M 10x120) per bracket (not included with product).
Fastening the guard-rail boards: Use nails

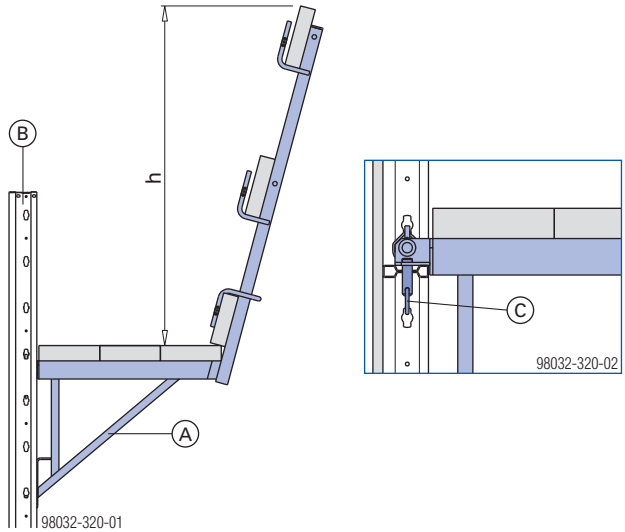
Permitted service load: 25 psf (120 kg/m²)
Max. influence width: 6'-0" (1.80 m)
Complies with the following Standards:

- OSHA 1926, Subpart L
- CAN/CSA S269.2 - "Access Scaffolding for Construction Purposes" (light-duty scaffolds)

The brackets must be secured against accidental lift-out

Multi-panel gangs without an opposing formwork and with pouring platforms must be fixed on the ground so as to prevent slippage.

On upright panel (fixed in the cross profile)

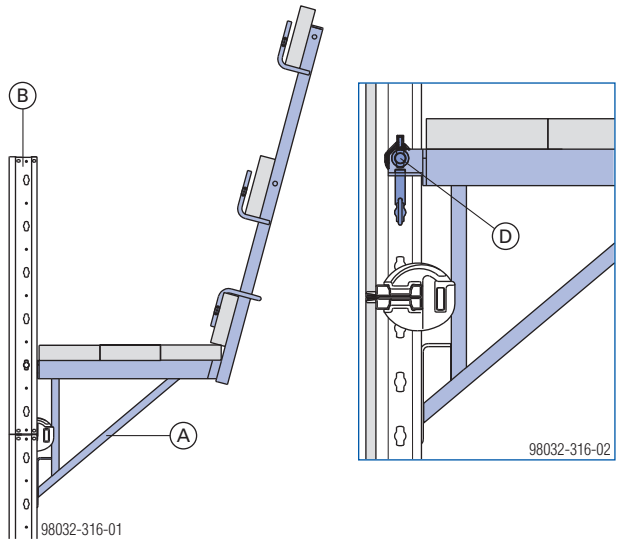


h ... 3'-7" (110 cm)

A	Frami bracket 60
B	Upright panel
C	Spring cotter (protection against accidental lift-out)

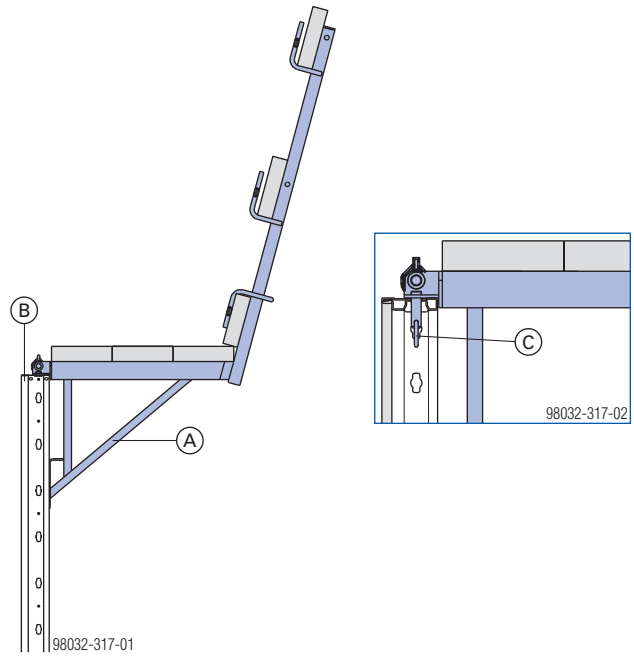
Note:
The bracket must NOT be fixed in the circular hole in the middle of the cross profile.

On horizontal panel (fixed in the cross profile)



A	Frami bracket 60
B	Horizontal panel
D	Fastening pin with linch pin (protection against accidental lift-out)

On upright or horizontal panel (fixed in the frame profile)



A	Frami bracket 60
B	Horizontal panel
C	Spring cotter (protection against accidental lift-out)

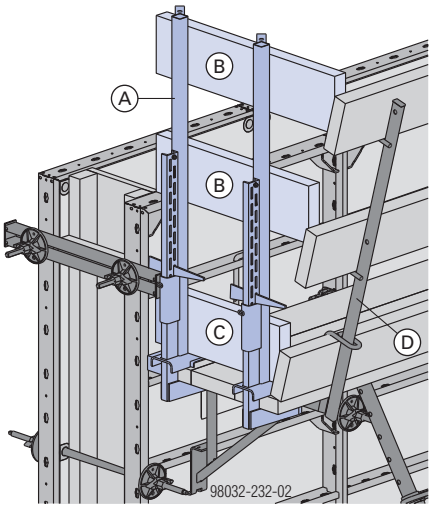
When the platform is fixed in the frame profile, the formwork does not provide any fall-protection.

➤ For this reason, mount an opposing guard-rail on the opposing formwork.

Sideguards on exposed platform-ends

On pouring scaffolds that do not completely encircle the structure, suitable sideguards must be placed across exposed end-of-platform zones.

with Handrail clamp S



A	Handrail clamp S
B	Guard-rail plank min. 2x4 (1 $^1/_2$" x 3 $^1/_2$" (4 x 9 cm)), site-provided
C	Guard-rail plank min. 2x6 (1 $^1/_2$" x 5 $^1/_2$" (4 x 14 cm)), site-provided
D	Frami bracket 60

Note:

The scaffold planks and guard-rail material shall meet or exceed any local, state, provincial or national regulations.

The sideguard consists of:

- 2 Handrail clamps S
- 2 guard-rail planks min. 1 $^1/_2$" x 3 $^1/_2$" (4 x 9 cm), site-provided
- 1 guard-rail plank min. 1 $^1/_2$" x 5 $^1/_2$" (4 x 14 cm), site-provided

How to mount:

➤ Fasten the handrail clamps to the deck planking of the pouring scaffold, using the wedge (clamping range 1" - 1'-5" (2 to 43 cm)).

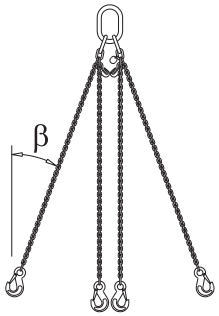
➤ Secure the guardrail planks to the loops on the handrail clamps with one d10 (28x65) nail per loop.

Follow the directions in the User Information booklet "Handrail clamp S"!

Resetting by crane

Safe crane-handling of Frami is made possible by the Doka 4-part chain 3.20m and the Frami lifting hook. The lifting hook locks automatically after being hung into place.

Doka 4-part chain 3.20m



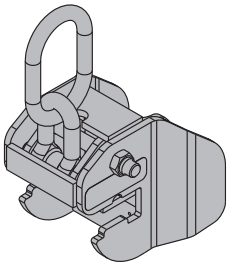
➤ Attach the Doka 4-part chain 3.20m to the Frami lifting hooks.

➤ Hang the remaining chain-lengths back in place.

Max. load-bearing capacity (as 2-part chain):
Up to spread-angle β of 30°: 5,200 lbs (2,400 kg).

Follow the directions in the Operating Instructions!

Frami lifting hook



Max. load:

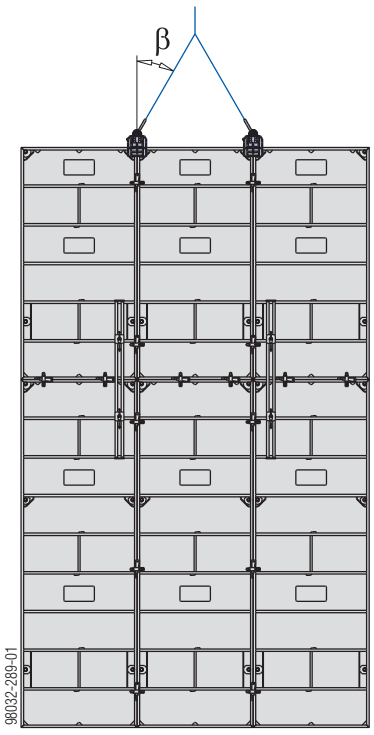
1100 lbs (500 kg) per Frami lifting hook

Area of formwork that can be lifted with 2 lifting hooks: approx. 270 sq.ft. (25 m²)

Follow the directions in the Operating Instructions!

Positioning the lifting hooks

- Never use the lifting hook to move the gangs in a horizontal position.
- Always position the lifting hook over the panel joint, to prevent the hook sliding from side to side.
  Exception: On horizontally-placed panels, the lifting hook must be placed over a cross profile.
- Suspend the gang-form symmetrically (center-of-gravity position).
- Spread-angle β max. 30°!



β ... max. 30°

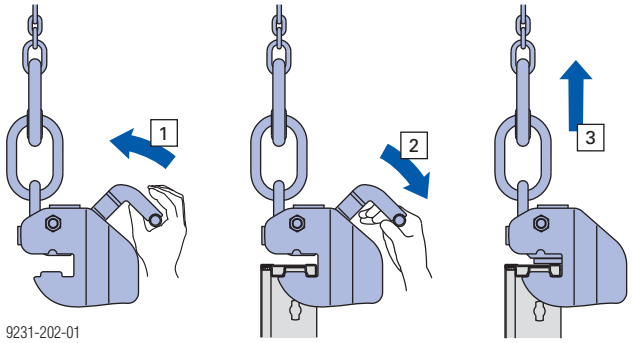
How to operate the lifting hook

1) Raise the handle (locking lever) as far as it will go.
2) Push the lifting hook onto the frame profile as far as the rear stop, and close the handle (spring-loaded).

Do a sight-check to make sure that there is a secure form-fit between the lifting hook and the frame profile!

The handle must be closed!

3) When the panels are lifted by the crane, a load-dependent locking mechanism is activated.



Stripping and resetting the panels

Before lifting: Remove any loose items from the formwork and platforms, or secure them firmly.

Important note:

➤ Guiding the gang should be done with tag-lines that are long enough to keep the person who is doing the guiding out of the way of the gang.

WARNING

The formwork tends to adhere to the concrete. When stripping the formwork, do not try to break concrete cohesion using the crane!

Risk of crane overload.

➤ Use suitable tools such as timber wedges or a special pry-bar to detach the formwork from the concrete.

➤ Fly the gang to its next location (guide with tag-lines if necessary).

Transporting, stacking and storing

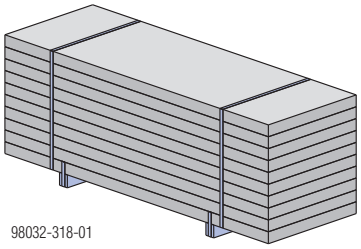
Bundling the panels

1) Place sleepers (W x H approx. 4" x 4" (10 x 10 cm)) under the cross profile.
2) Strap the sleepers (hardwood blocking) and the bottom panel together with metal banding.

CAUTION

➤ Stack max. 10 panels on top of one another (results in a stack height, incl. sleepers, of approx. 3'-4" (100 cm)).

3) Strap the whole stack together tightly with metal banding.



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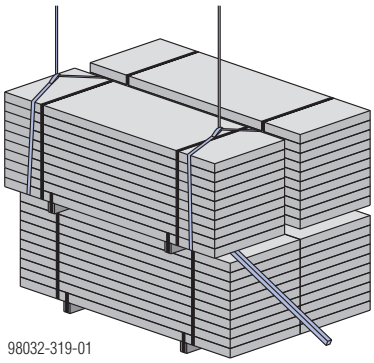
Transporting the panels

Dokamatic lifting strap 13.00m

The Lifting strap 13.00m is a practical tool for **offloading and loading trucks**, and for **lifting and setting down** stacks of panels.



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With closely stacked bundles of panels:

➤ lever up the bundle of panels (e.g. with a piece of dimensional lumber **(D)**), to make a space for threading in the lifting straps.
Caution!
When doing this, always make sure that the bundle of panels remains stable!

WARNING

➤ The Lifting straps 13.00 m may only be used as shown here if there is no risk of the straps sliding towards one another, or of the load being displaced.

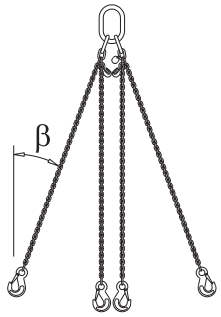
Max. load: 4,400 lbs (2,000 kg)

Follow the directions in the Operating Instructions!

Doka 4-part chain 3.20m

The Doka 4-part chain 3.20m is a multi-functional slinging means:

- used with the integrated **eye-hooks** for hoisting formwork, platforms and multi-trip packaging containers
- used in conjunction with **Frami transport hook 2.5kN** for hoisting stacks of panels and individual panels



The Doka 4-part chain 3.20m can be adjusted to the center-of-gravity position by shortening the lengths of the individual chains.

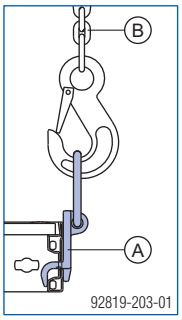
Max. load:

	Spread-angle β			
	0°	0°-30°	30°-45°	45°-60°
Using 1 chain	3,000 lbs (1,400 kg)	-	-	-
Using 2 chains	-	5,200 lbs (2,400 kg)	4,400 lbs (2,000 kg)	3,000 lbs (1,400 kg)
Using all 4 chains	-	7,900 lbs (3,600 kg)	6,600 lbs (3,000 kg)	4,600 lbs (2,120 kg)

Follow the directions in the Operating Instructions!

Frami transport hook 2.5kN with Doka 4-part chain 3.20m

Close-up of Frami transport hook 2.5kN



A Frami transport hook 2.5kN
B Doka 4-part chain 3.20m
C Stacking tape
D Strapping tape

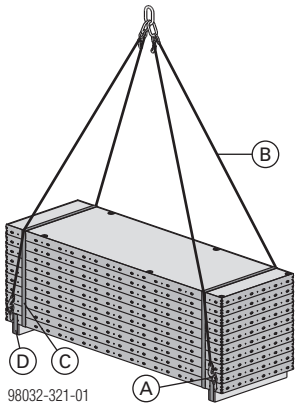
Max. load:
550 lbs (250 kg) per Frami transport hook 2.5kN

Follow the directions in the Operating Instructions!

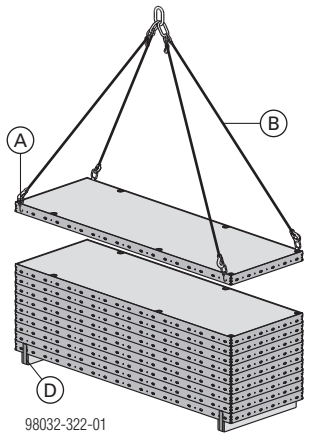
The Frami transport hook 2.5kN plus Doka 4-part chain 3.20m are used for:

- Hoisting bundled stacks of panels
- Lifting panels off the stack
- Handling horizontal (flat) multi-panel gangs

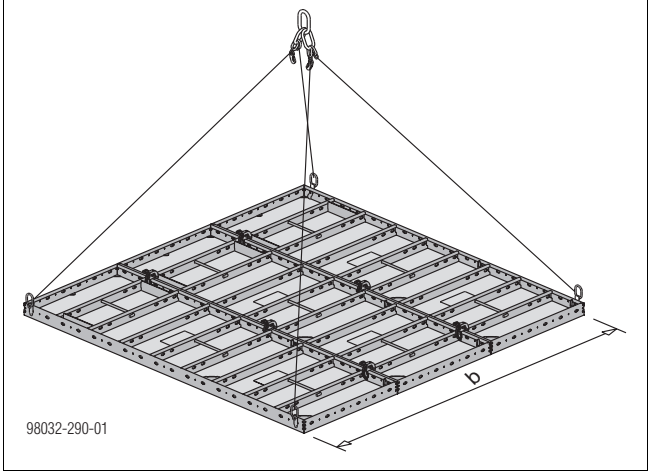
Hoisting bundled stacks of panels



Lifting panels off the stack



Handling horizontal (flat) multi-panel gangs



Dimension "b" (width of gang)	Max. n° of panels across width of gang
Up to 6'-0"	No restriction
Over 6'-0"	**Max. 3 panels**

WARNING
Using the Frami transport hook 2.5kN to **lift either single panels or multi-panel gangs** into the upright is **forbidden**.
➤ Use the Frami lifting hook to lift panels or gangs into the upright.

Doka multi-trip packaging

Utilize the benefits of Doka multi-trip packaging on your worksite.

Our Multi-trip packaging such as transport boxes, stacking pallets, accessory boxes and skeleton transport boxes keep everything in place on the site.

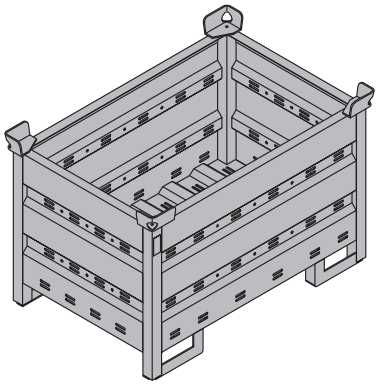
Doka multi-trip transport box 1.20x0.80m

The ideal container for all small components:

- durable
- stackable
- safe to lift by crane

The multi-trip transport box is used for delivering e.g.:

- Frami clamps
- Frami adjustable clamps
- Frami universal walings 0.70m
- Frami wedge clamps
- Frami filler angles
- Frami universal fixing bolts 5-12cm

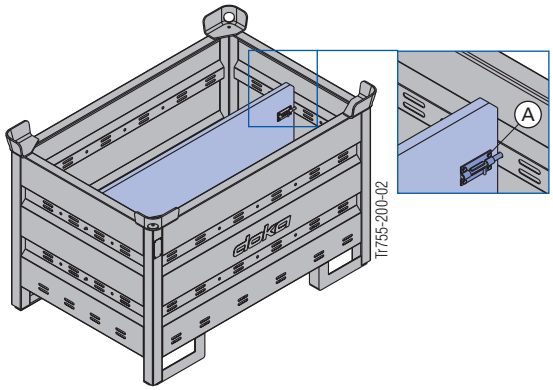


Max. load: 3,300 lbs (1,500 kg)

Follow the directions in the Operating Instructions!

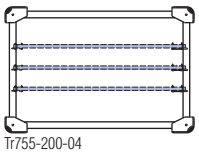
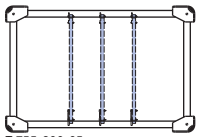
Multi-trip transport box partition

Different items in the Multi-trip transport box can be kept separate with the Multi-trip transport box partitions 1.20m or 0.80m.



A Slide-bolt for fixing the partition

Possible ways of dividing the box

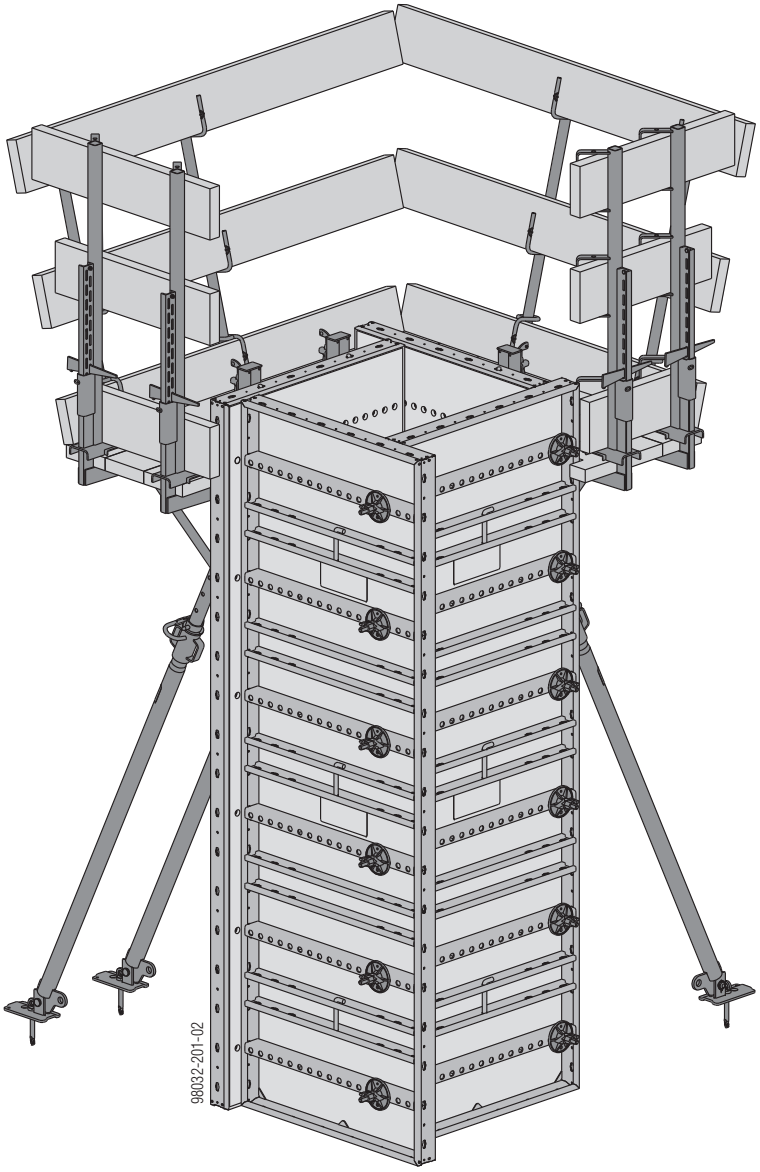
Multi-trip transport box partition	Lengthways	Crossways
1.20m	max. 3 units	-
0.80m	-	max. 3 units
	 Tr755-200-04	 Tr755-200-05

Column formwork

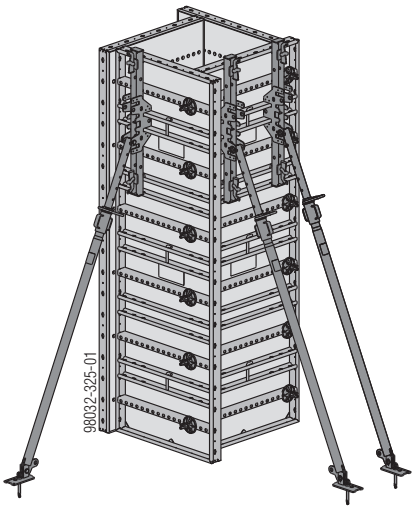
There are several different ways of using Frami framed formwork to make column formworks:

- with **Xlife universal panels**
  - for flexible accommodation to column cross-sections of up to 32" x 32" (81 x 81 cm) in 2" (5.1 cm) increments
- combining **Xlife universal panels and standard Xlife panels**
  - is a highly economical solution for certain cross-sections of column
- with **Xlife panels and outside corners**
  - for dimensions of 6" (15.2 cm), 12" (30.5 cm), 18" (45.7 cm) and 24" (61 cm)

Permitted pressure of fresh concrete:
1650 psf (80 kN/m²)



Design of column formwork



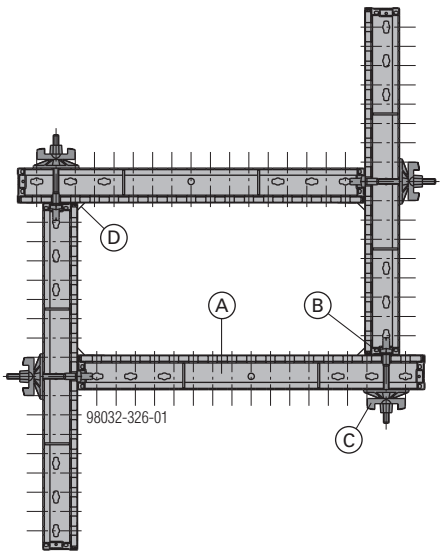
- To achieve exact plumbing & aligning of the column formwork, the best arrangement of the panel struts is as shown above.
- Always attach panel struts to free-standing formwork halves to prevent them from falling over.

To obtain the highest possible dimensional accuracy, the panels must be pushed apart (i.e. towards the outside) while being assembled.

with Xlife universal panels

The practical 2" (5.1 cm) hole-grid is ideal for forming columns. **Cross-sections of up to 32" x 32" (81 x 81 cm).** By combining panels with heights of 9'-0", 6'-0", 4'-0", 3'-0" and 2'-0", an incremental height grid of 1'-0" (30.5 cm) can be achieved.

Possible cross-sections in a 2" (5.1 cm) increment-grid



Example: 16" x 30" (40.6 x 76.2 cm) column

A Frami S Xlife universal panel

B Frami universal fixing bolt 5-12cm

C Super-plate 15.0

D Frami S frontal triangular ledge 3/4"

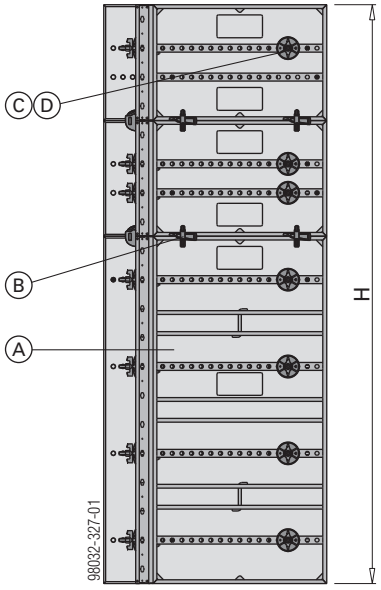
Frami universal fixing bolt:

Permitted tensile load:

3.51 kip (15.6 kN), when used in the Xlife universal panel

Close off any unused holes in the form-facing of the Universal panels with **Frami plugs**.

Materials schedule:



Formwork height (H)	Xlife universal panels (A)					Frami clamps (B)	Universal fixing bolts (C)	Super-plates 15.0 (D)
	9'-0"	6'-0"	4'-0"	3'-0"	2'-0"			
9'-0" (2.74 m)	4						24	24
10'-0" (3.05 m)		4	4			8	28	28
11'-0" (3.35 m)	4				4	8	28	28
12'-0" (3.65 m)	4			4		8	32	32
13'-0" (3.96 m)	4		4			8	36	36
14'-0" (4.26 m)	4			4	4	16	36	36
15'-0" (4.57 m)	4	4				8	40	40
16'-0" (4.87 m)	4		4	4		16	44	44
17'-0" (5.18 m)	4	4			4	16	44	44
18'-0" (5.48 m)	8					8	48	48

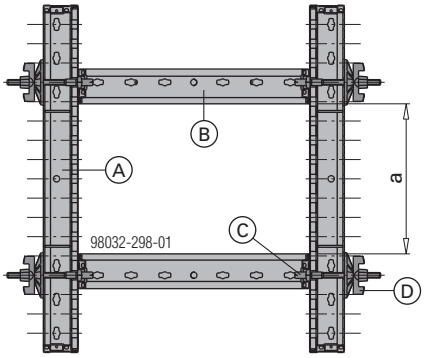
Table gives number of items needed

A 2'-0" high Xlife universal panel as the topmost panel requires only one Universal fixing bolt 5-12cm + Super-plate at each corner of the column.

with Xlife universal panels and Xlife standard panels

Certain cross-sections of column can be formed highly economically by combining Xlife universal panels and standard Xlife panels.

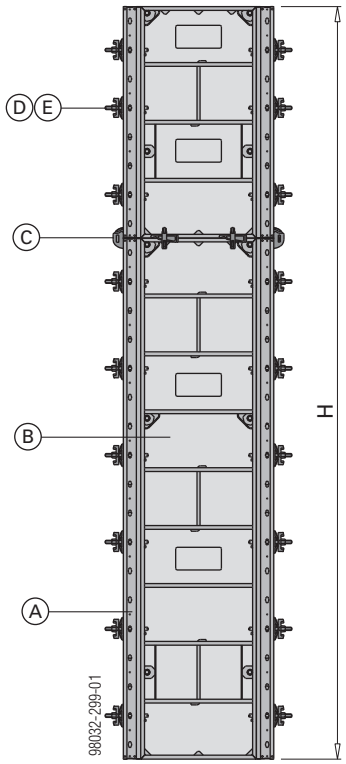
Possible cross-sections:



a ... up to 28" (71 cm), in 2" (5.1 cm) increments
Example: 16" x 24" (40.6 x 61 cm) column

A	Frami S Xlife universal panel
B	Frami S Xlife panel (max. 2'-0")
C	Frami universal fixing bolt 5-12cm
D	Super-plate 15.0

Materials schedule:



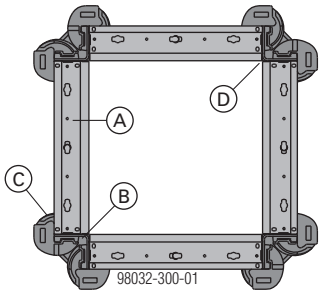
Formwork height **(H)**	Xlife universal panels **(A)**				Xlife panels **(B)**			
	9'-0"	6'-0"	4'-0"	3'-0"	9'-0"	6'-0"	4'-0"	3'-0"
3'-0" (0.91 m)				2				2
4'-0" (1.22 m)			2				2	
6'-0" (1.83 m)		2				2		
7'-0" (2.13 m)			2	2			2	2
8'-0" (2.44 m)			4				4	
9'-0" (2.74 m)	2				2			
10'-0" (3.05 m)		2	2			2	2	
11'-0" (3.35 m)			4	2			4	2
12'-0" (3.65 m)	2			2	2			2
13'-0" (3.96 m)	2		2		2		2	
14'-0" (4.26 m)		2	4			2	4	
15'-0" (4.57 m)	2	2			2	2		
16'-0" (4.87 m)	2		2	2	2		2	2
17'-0" (5.18 m)	2		4		2		4	
18'-0" (5.48 m)	4				4			

Formwork height **(H)**	Frami clamp **(C)**	Frami universal fixing bolt 5-12cm **(D)**	Super-plate 15.0 **(E)**
3'-0" (0.91 m)		8	8
4'-0" (1.22 m)		12	12
6'-0" (1.83 m)		16	16
7'-0" (2.13 m)	8	20	20
8'-0" (2.44 m)	8	24	24
9'-0" (2.74 m)		24	24
10'-0" (3.05 m)	8	28	28
11'-0" (3.35 m)	16	32	32
12'-0" (3.65 m)	8	32	32
13'-0" (3.96 m)	8	36	36
14'-0" (4.26 m)	16	40	40
15'-0" (4.57 m)	8	40	40
16'-0" (4.87 m)	16	44	44
17'-0" (5.18 m)	16	48	48
18'-0" (5.48 m)	8	48	48

Table gives number of items needed

with outside corners and Xlife panels

Column dimensions of **6" (15.2 cm), 12" (30.5 cm), 18" (45.7 cm)** and **24" (61 cm)** can also be formed with **outside corners** and **Xlife panels**.

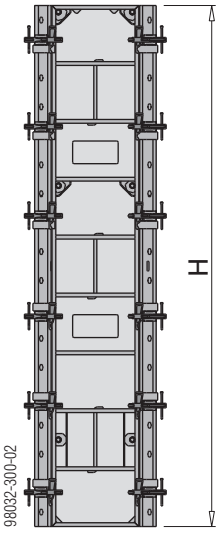


Example: 18" x 18" (45.7 x 45.7 cm) column

A Frami S Xlife panel (max. 2'-0")
B Frami S outside corner
C Frami clamp
D Triangular ledge

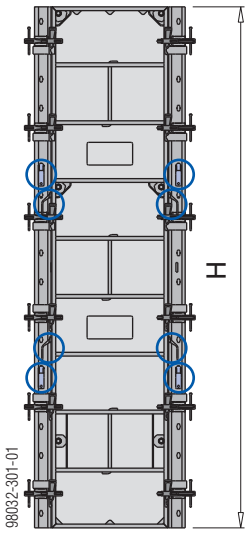
Materials schedule:

up to 18" (45.7 cm)



Example: Outside corners 9'-0" with Xlife panels 1'-6"x9'-0"

up to 24" (61 cm)



Example: Outside corners 9'-0" with Xlife panels 2'-0"x9'-0" and extra Frami clips

Important note:

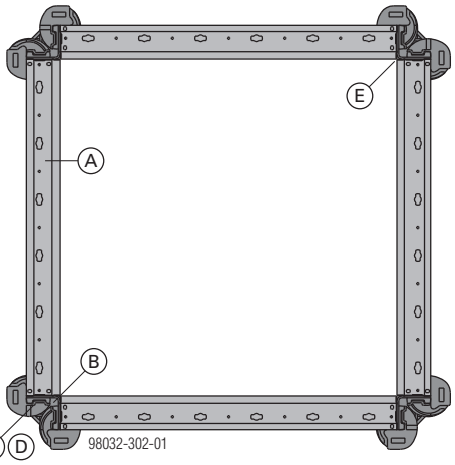
For 24" (61 cm) wide columns, 4 Frami clips for every 9'-0" (2.74 m) of column height are also required in the Frami outside corner.

Panel height **(H)**	Xlife panels **(A)**				Outside corners **(B)**				Frami clamps **(C)**
	9'-0"	6'-0"	4'-0"	3'-0"	9'-0"	6'-0"	4'-0"	3'-0"	
3'-0"				4				4	16
4'-0"			4				4		24
6'-0"		4				4			32
9'-0"	4				4				48

Table gives number of items needed

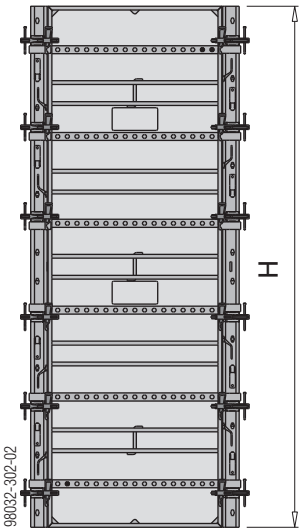
with outside corners and Xlife universal panels

Column dimensions of **36" (91.5 cm)** can also be formed with **outside corners** and **Xlife universal panels**.



A Frami S Xlife universal panel
B Frami S outside corner
C Frami clamp
D Frami clip
E Triangular ledge

Materials schedule:



Example: Outside corners 9'-0" with Xlife universal panels 3'-0"x9'-0"

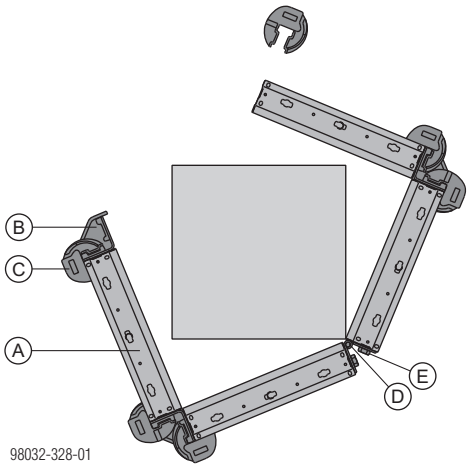
Panel height **(H)**	Xlife universal panels **(A)**				Outside corners **(B)**				Frami clamps **(C)**	Frami clips **(D)**
	9'-0"	6'-0"	4'-0"	3'-0"	9'-0"	6'-0"	4'-0"	3'-0"		
3'-0"				4				4	16	16
4'-0"			4				4		24	16
6'-0"		4				4			32	24
9'-0"	4				4				48	32

Table gives number of items needed

with column hinge and Xlife panels

The Frami S column hinge makes for **easy opening and closing** of the column formwork. This does away with time-consuming assembly and dismantling work.

In conjunction with Xlife panels and outside corners, the column hinges make it possible to form column dimensions of **6" (15.2 cm), 12" (30.5 cm), 18" (45.7 cm)** and **24" (61 cm)**.

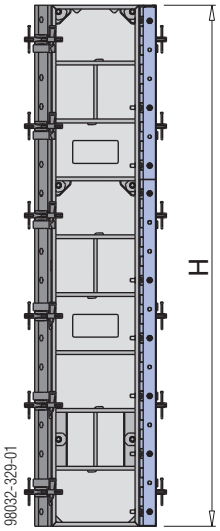


Example: 18" x 18" (45.7 x 45.7 cm) column

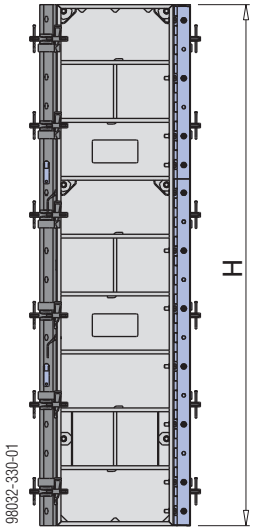
A	Frami S Xlife panel (max. 2'-0")
B	Frami S outside corner
C	Frami clamp
D	Frami S column hinge
E	Hexagon bolt DIN 933 M18x50 8.8 galv.+ Hexagon nut DIN 934 M18 8 galv.

Materials schedule:

Example with Xlife panel 1'-6"x9'-0"



Example with Xlife panel 2'-0"x9'-0"



Important note:

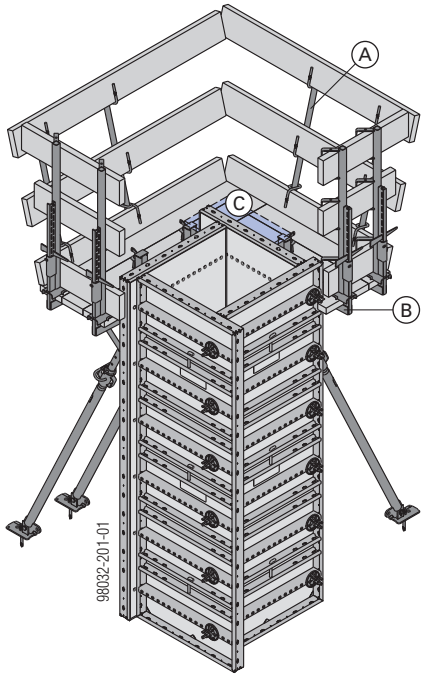
- For 24" (61 cm) wide columns, 4 Frami clips for every 9'-0" (2.74 m) of column height are also required in the Frami outside corner.
- For 24" (61 cm) wide columns, 4 extra screws are also required in the Frami S column hinge for every 9'-0" (2.74 m) of column height.

Panel height **(H)**	Xlife panels **(A)**				Outside corners **(B)**			
	9'-0"	6'-0"	4'-0"	3'-0"	9'-0"	6'-0"	4'-0"	3'-0"
3'-0"				4				3
4'-0"			4				3	
6'-0"		4				3		
9'-0"	4				3			

Panel height **(H)**	Column hinge **(D)**			Hexagon bolt + hexagon nut **(E)**	Frami clamp **(C)**
	6'-0"	4'-0"	3'-0"		
3'-0"			1	6	12
4'-0"		1		8	18
6'-0"	1			12	24
9'-0"	1		1	18	36

Table gives number of items needed

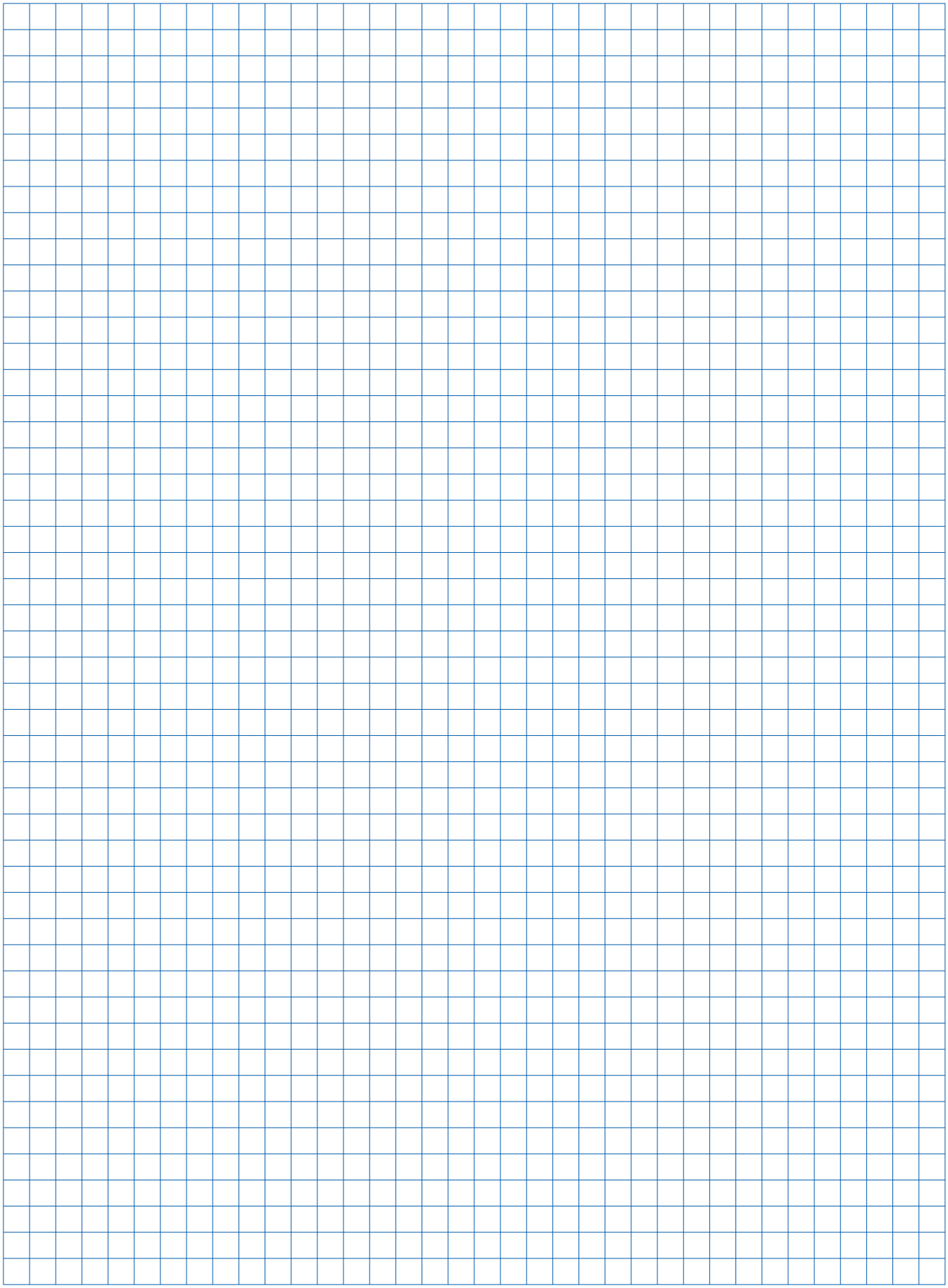
Pouring platform with Frami bracket 60



A	Frami bracket 60 (floor and railing planking provided at site)
B	Handrail clamp S (railing planking provided at site)
C	Board for screwing the floor planking onto

Note:
Where the two floor planking units meet, a board must be screwed onto the underside.

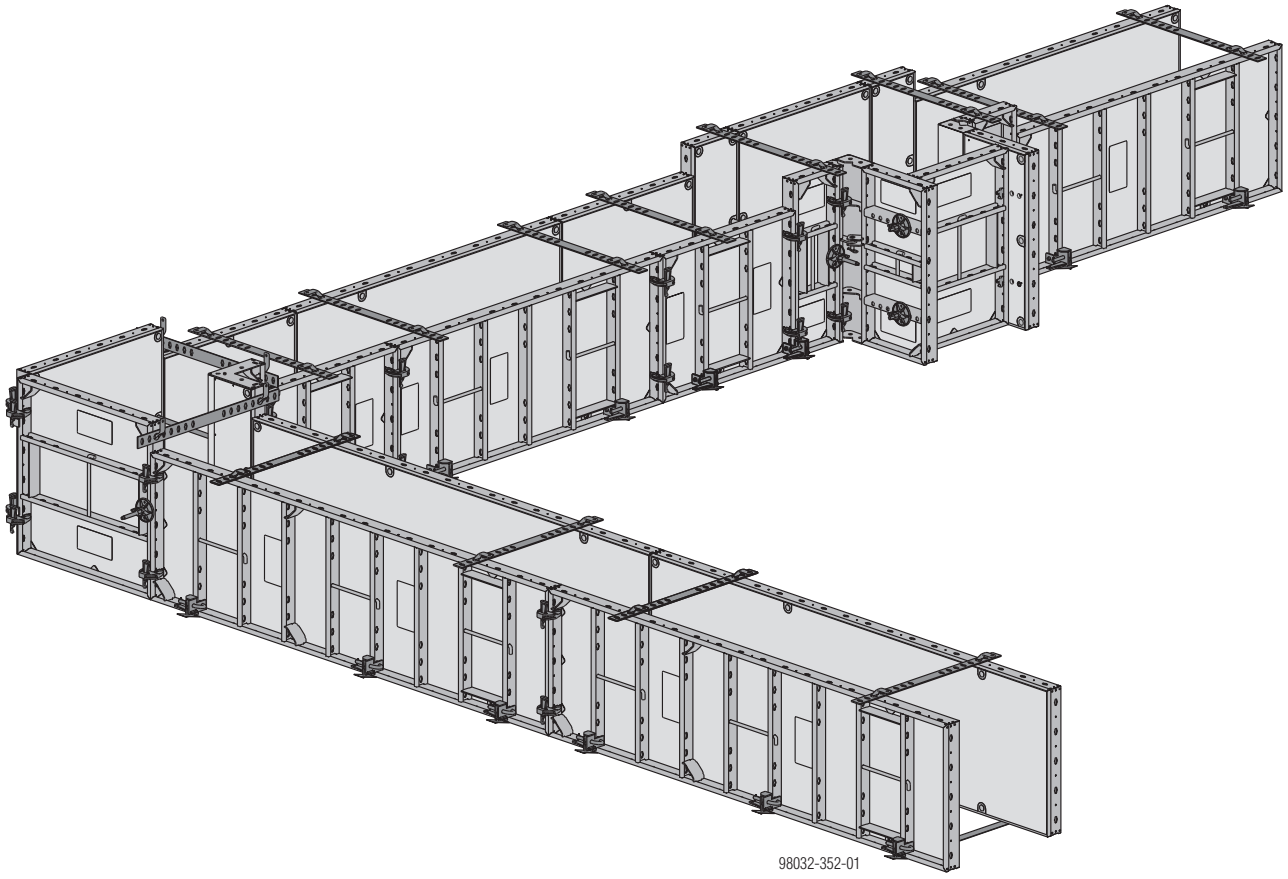
For more information on constructing pouring platforms, see "Pouring platforms with single brackets".



Footing and grade beam formwork

The Frami panels can also be used for footings and grade beams.

This is particularly advantageous where it is intended to continue forming (i.e. the walls) using the same panels. Footings and grade beams can quickly be formed with any of the Frami panels, with the panels either upright or horizontal. Frami clamps, and a blow with the hammer, are all it takes to join the panels. Length adjustments and corners are solved just as simply as in "normal" walls. A range of practical accessories makes the work very much easier.

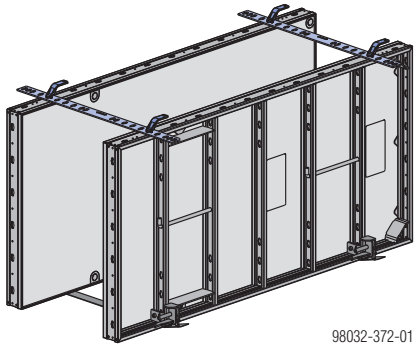


98032-352-01

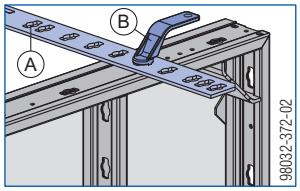
Tying horizontal Xlife panels

Top tie

with Frami S flat tie-rods and Frami clips



- Tie-rod is held above panel (not in the concrete)



A Frami S flat tie-rod 4"-32"
B Frami clip

Frami S flat tie-rod 4"-32":
Permitted capacity: 1.12 kip (5.0 kN)

Frami clip:
Permitted tensile force: 2.245 kip (10.0 kN)
Permitted shear force: 1.12 kip (5.0 kN)
Permitted moment: 0.15 kip-ft (0.20 kNm)

Number of ties needed:

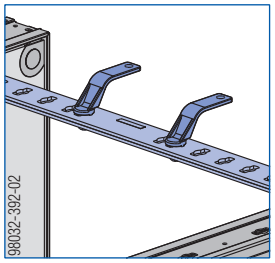
Xlife panel (horizontal)	Number of ties
3'-0"	1 *)
4'-0"	1 *)
6'-0"	2
9'-0"	2

*) Two ties are needed in the first panel, and two in the last panel.

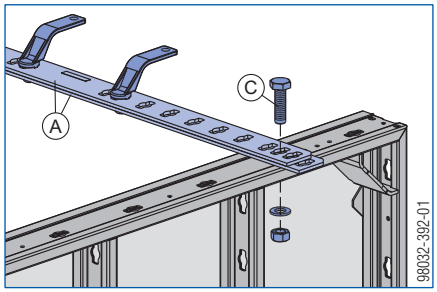
Possible wall thicknesses:

Wall thicknesses	Grid	Number of Frami S flat tie-rods 4"-32"
4" - 32" (10 - 81 cm)	2" (5.1 cm)	1 per tie
33" - 47" (83.5 - 119 cm)	1" (2.5 cm)	2 per tie *)
47 1/2" - 64 1/2" (120.2 - 163.2 cm)	1" (2.5 cm)	2 per tie *)

*) join these flat tie-rods with 2 Frami clips.



Special cases for wall thicknesses of 33" and 34":

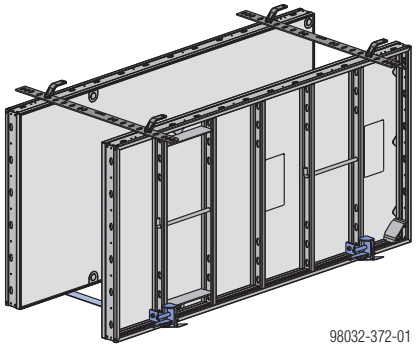


Wall thick-ness	How to fix the flat tie-rods
33"	Bolt to both sides
34"	1 bolt, 1 Frami clip

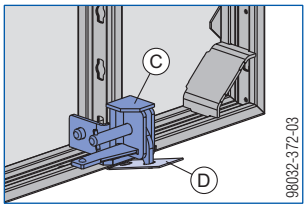
A Frami S flat tie-rod 4"-32"
C Speed bolt 5/8 x 1 3/4" (M16x45)

Bottom tie

with Doka perforated tape and Frami foundation clamps



- Tie is held beneath the panel
- Wall thicknesses: in 2" (5.1 cm) increments



C Frami foundation clamp
D Doka perforated tape (expendable anchoring component)

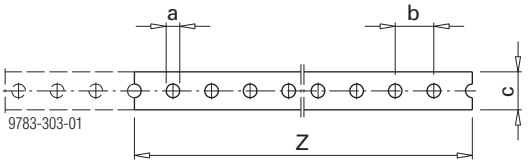
Frami foundation clamp:
Permitted capacity: 1.795 kip (8.0 kN)

Required numbers of Doka perforated tapes:

Formwork height	Xlife panel (horizontal)	Number of Doka perforated tapes	Position
Up to 2'-6" (76 cm)	3'-0"	1 *)	Right next to the panel joint (1', 30 cm)
	4'-0"		
	6'-0"	2	
	9'-0"	2	Each 2'-0" (61 cm) from the panel joint
Up to 3'-0" (91 cm)	3'-0"	1 *)	Right next to the panel joint (1', 30 cm))
	4'-0"	2	
	6'-0"		
	9'-0"	3	2 tapes right next to the panel joint and 1 tape 4'-0" (122 cm) from the panel joint

*) Two Doka perforated tapes are needed in the first panel, and two in the last panel.

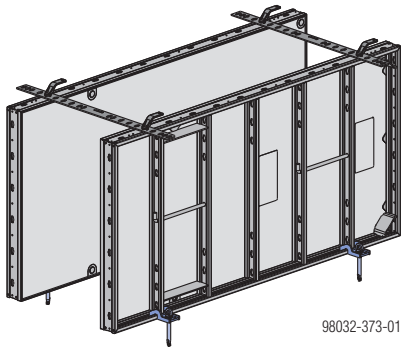
Doka perforated tape



Z ... Length of tape cut off roll: Wall thickness + 15 $^3/_4$" (40 cm)

	a	b	c
Doka perforated tape S 2" 25m	$^3/_4$"	2"	2"
Doka perforated tape 50x2.0mm 25m	18 mm	5 cm	5 cm

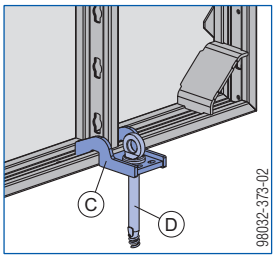
with Frami floor fixing plates and Doka Express anchors 16x125mm



- The tie is not in the concrete

Important note:

Only use Frami floor fixing plates on foundation slabs and concrete floor-slabs.



E Frami floor fixing plate

F Doka Express anchor 16x125mm + Doka coil 16mm

Frami floor fixing plate:

Permitted capacity in B10 concrete: 1.795 kip (8.0 kN)

Permitted capacity in B20 concrete: 2.473 kip (11.0 kN)

Required concrete thickness: min. 6" (16 cm)

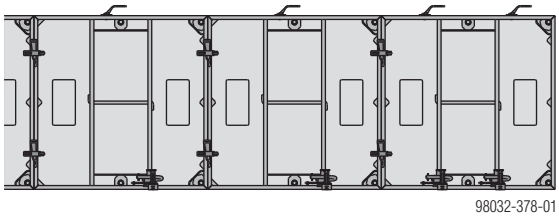
Required numbers of Frami floor fixing plates:

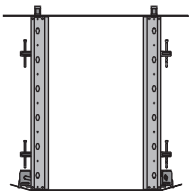
Concrete grade of the foundation slab	Formwork height	Xlife panel (horizontal)	Number of Frami floor fixing plates	Position
B10	Up to 2'-6" (76 cm)	3'-0"	1 *)	Right next to the panel joint
		4'-0"		
		6'-0"	2	
		9'-0"	2	Each 2'-0" (61 cm) from the panel joint
	Up to 3'-0" (91 cm)	3'-0"	1 *)	Right next to the panel joint
		4'-0"		
		6'-0"	2	
		9'-0"	3	2 of them each 15 3/4" (40 cm) from the panel joint, 1 of them in the middle
B20	Up to 3'-0" (91 cm)	3'-0"	1 *)	Right next to the panel joint
		4'-0"		
		6'-0"	2	Each 2'-0" (61 cm) from the panel joint
		9'-0"		

*) Two Frami floor fixing plates are needed in the first panel, and two in the last panel.

Practical example

Xlife panel 3'-0"x3'-0"





A Frami S flat tie-rod

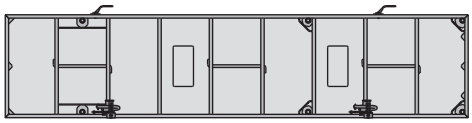
B Frami clip

C Frami foundation clamp

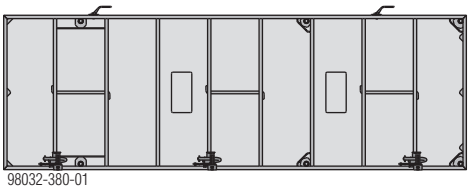
D Doka perforated tape (expendable)

E Frami S Xlife panel 3'-0"x3'-0"

Xlife panel 2'-0"x9'-0"

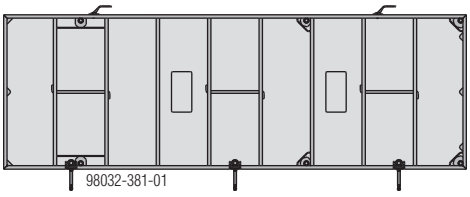


Xlife panel 3'-0"x9'-0"



with Frami floor fixing plates and Doka Express anchors 16x125mm

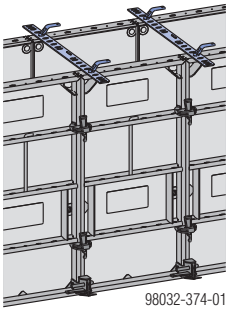
Xlife panel 3'-0"x9'-0"



Tying upright Xlife panels

Top tie

with Frami S flat tie-rods and Frami clips



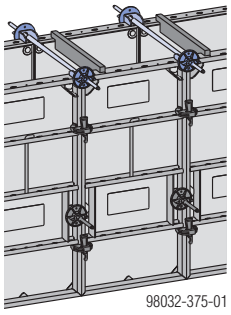
Number of ties needed:

Xlife panel (upright)	Number of ties	Position
3'-0"	1 *)	Right next to the panel joint
4'-0"		

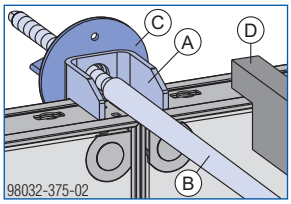
*) Two ties are needed in the first panel, and two in the last panel.

For more information, see "Tying horizontal Xlife panels".

with Frami anchoring bracket and Taper tie 3/4" to 1" & 5/8" [15.0] ends



- Tie-rod is held above panel (not in the concrete)



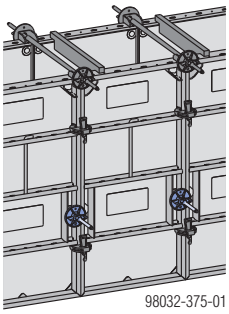
A Frami anchoring bracket
B Taper tie 3/4" to 1" & 5/8" [15.0] ends
C Super-plate 15.0
D Wooden spacer

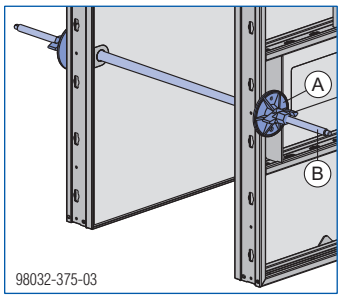
Required numbers of Frami anchoring brackets:

Xlife panel (upright)	Number and position of Frami anchoring brackets
3'-0"	Over every panel joint
4'-0"	

Bottom tie

with Taper tie 3/4" to 1" & 5/8" [15.0] ends



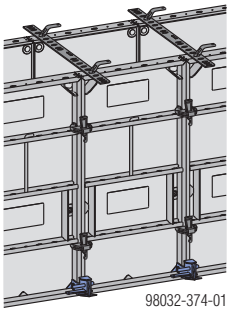


A Super-plate 15.0
B Taper tie 3/4" to 1" & 5/8" [15.0] ends

Required number of form-ties:

Xlife panel (upright)	Number and position of ties
3’-0"	At every panel joint
4’-0"	

with Doka perforated tape and Frami foundation clamps



Max. pour-heights:

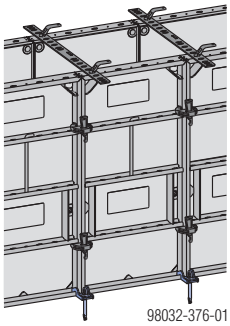
Panel width	Max. pour height
3’-0"	3’-0" (90 cm)
2’-6"	3’-6" (106 cm)
2’-0"	4’-0" (122 cm)

Required numbers of Doka perforated tapes:

Xlife panel (upright)	Number and position of Doka perforated tapes
3’-0"	Over every panel joint
4’-0"	

For more information, see "Tying horizontal Xlife panels".

with Frami floor fixing plates and Doka Express anchors 16x125mm



Important note:

Only use Frami floor fixing plates on foundation slabs and concrete floor-slabs.

Max. pour-heights:

Concrete grade of the foundation slab	Panel width	Max. pour height
B10	3'-0"	3'-2" (96 cm)
	2'-6"	3'-6" (106 cm)
	2'-0"	4'-0" (122 cm)
B20	3'-0"	3'-6" (106 cm)
	2'-6"	4'-0" (122 cm)

Required numbers of Frami floor fixing plates:

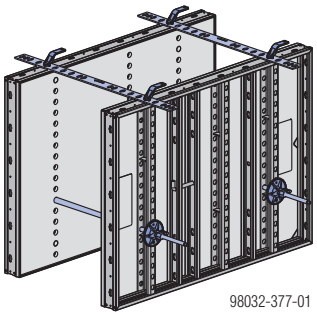
Xlife panel (upright)	Number and position of Frami floor fixing plates
3'-0"	Over every panel joint
4'-0"	

For more information, see "Tying horizontal Xlife panels".

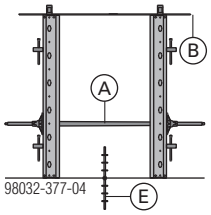
Tying horizontal Xlife universal panels

With Xlife universal panels, it is possible to tie the panels above a joint-sealing tape.

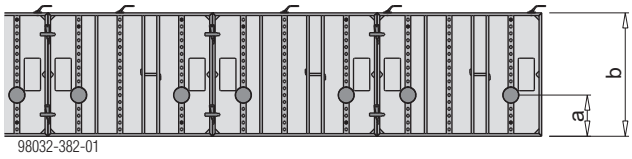
Note:
The max. tying height is 1'-0" (30 cm) – do not place the tie higher than this!



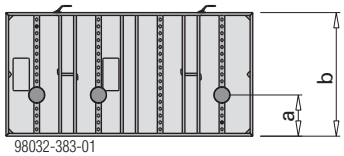
Practical example



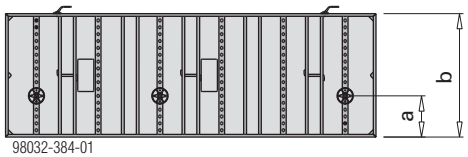
Xlife universal panel 3'-0"x4'-0"



Xlife universal panel 3'-0"x6'-0"



Xlife universal panel 3'-0"x9'-0"

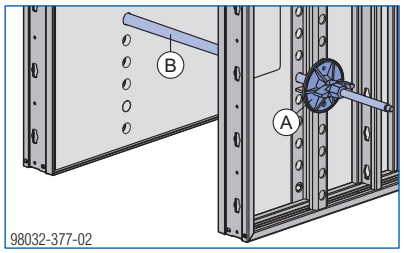


a ... max. tying height = 1'-0" (30 cm)
b ... 3'-0" (91 cm)

A Taper tie 3/4" to 1" & 5/8" [15.0] ends
B Frami S flat tie-rod
C Frami clip
D Frami S Xlife universal panel
E Joint-sealing tape

Tying inside the panel:

with Taper tie 3/4" to 1" & 5/8" [15.0] ends



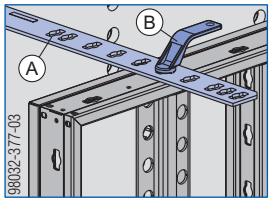
A Super-plate 15.0
B Taper tie 3/4" to 1" & 5/8" [15.0] ends

Required number of form-ties:

Xlife universal panel (horizontal)	Number of ties
3'-0"	2
4'-0"	2
6'-0"	3
9'-0"	3

Pressure bracing at top

with Frami S flat tie-rods and Frami clips



A Frami S flat tie-rod 4"-32"
B Frami clip

Required numbers of pressure braces:

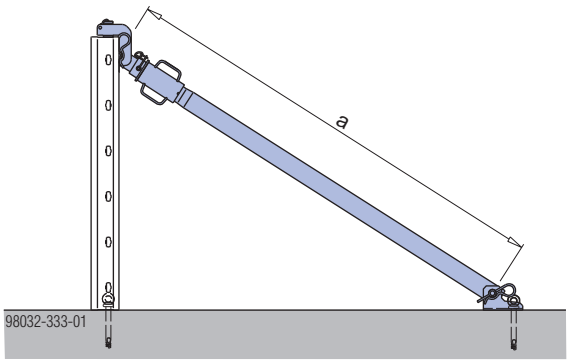
Xlife universal panel (horizontal)	Number of pressure braces
3'-0"	1 *)
4'-0"	1 *)
6'-0"	2
9'-0"	2

*) Two pressure braces are needed in the first panel, and two in the last panel.

Plumbing accessories

The Doka plumbing accessories are the safe, reliable way to set up and plumb the panels of the footing and grade beam formwork.

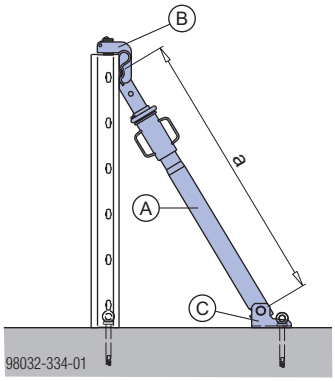
Plumbing the panels with the Frami plumbing strut 260



a ... min. 4'-9" (147 cm)

For more information, see the section headed "Plumbing accessories".

Plumbing the panels with the Adjusting strut 120

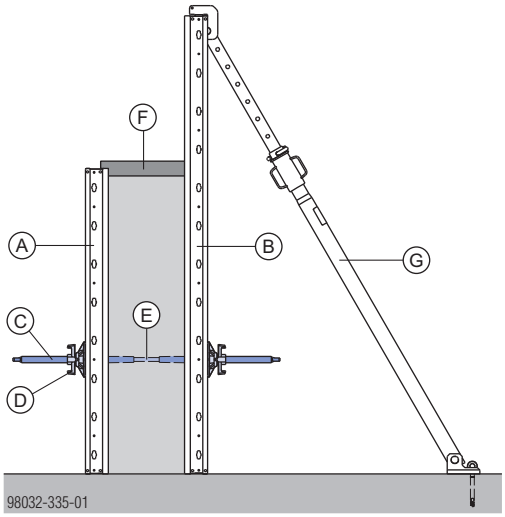


a ... min. 2'-7 $^{1}/_{2}$" - max. 4'-3" (82 - 131 cm)

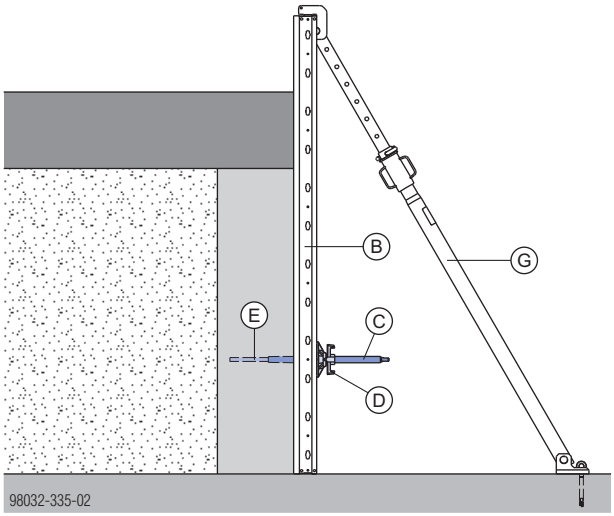
A	Adjusting strut 120
B	Frami strut head
C	Strut shoe for Frami plumbing strut 260

Frost walls

1st casting section



2nd casting section



A	Frami S Xlife panel 4'-0"
B	Frami S Xlife panel 6'-0"
C	She-bolt 7/8"x19"
D	Super-plate 20.0 B
E	Euro rod 5/8"
F	Wooden spacer
G	Frami plumbing strut 260

Cleaning and care of your equipment

To keep formwork cleaning costs as low as possible, please observe the following:

Concrete release agent

Before every pour

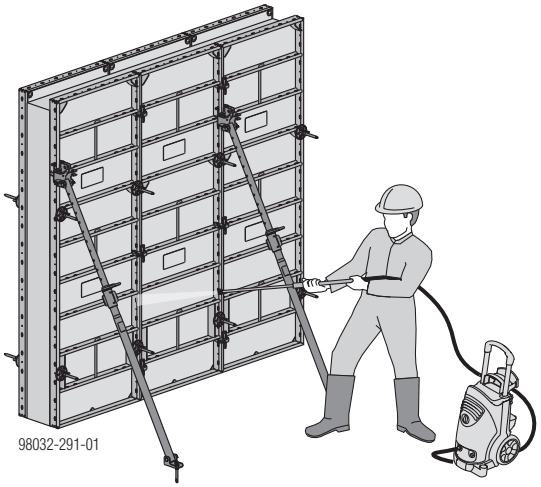
➤ Apply release agent to the formwork sheet and the end faces **extremely thinly**, **evenly** and **in a continuous layer** (make sure there are no traces of release-agent running down the formwork sheet)! Applying too much release agent will spoil the concrete finish.

To determine the right dosage and to make sure that you are using the agent correctly, test it on less important parts of the structure first.

Cleaning

Immediately after pouring

➤ Remove any blobs of concrete from the back-face of the formwork, using water (without any added sand).



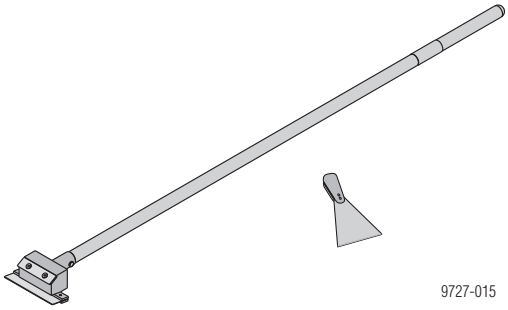
Immediately after stripping the formwork

➤ Clean the formwork with a concrete scraper.

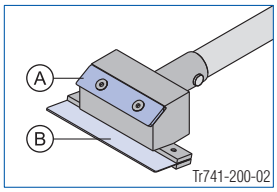
Cleaning equipment

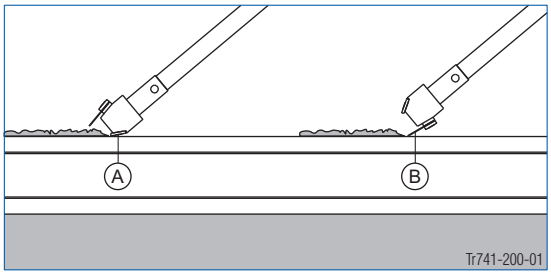
Concrete scraper

For removing any concrete remnants, we recommend using a **Double scraper Xlife** and a spatula.



Functional description:



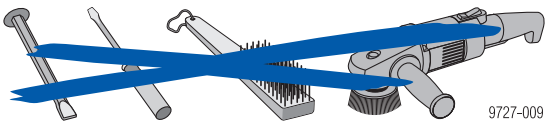


A Blade for dealing with heavy soiling

B Blade for dealing with slight soiling

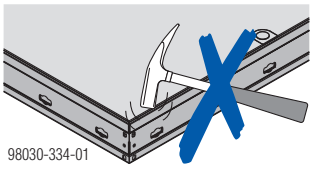
Note:

Do not use any pointed or sharp objects, wire brushes, rotating grinding disks or pan scourers.

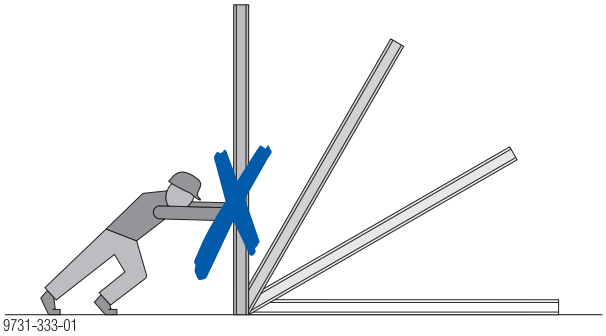


Care

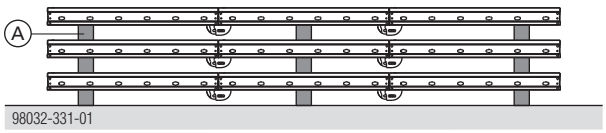
- No hammer-blows to the frame profiles



- Never push over panels or allow them to fall



- Only stack panel gangs on top of one another with timber battens **(A)** between each layer.

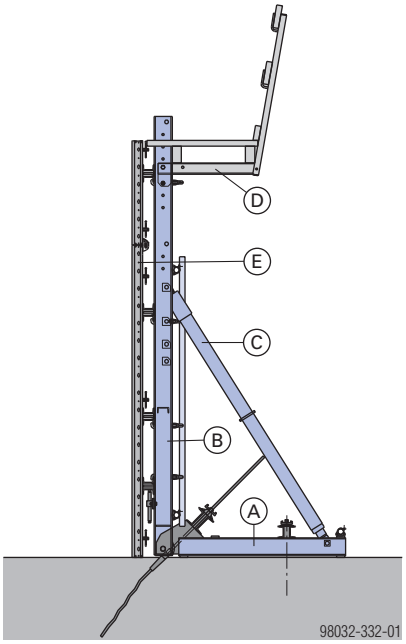


This prevents the formwork sheets from being damaged by the connector components.

Frami combined with . . .

Starting block D22

With the Starting block of the Dam formwork D22, you can also use the Frami panels for single-sided wall formwork.



A	Starter-block unit D22
B	Vertical waling D15 3.00m U120
C	Spindle strut D15 3.00m
D	Screw-on access bracket MF75
E	Frami S Xlife panel

Follow the directions in the “Doka dam formwork” User Information!

Doka service offerings

Doka Reconditioning Service

So that your formwork is in "top form" for its next assignment

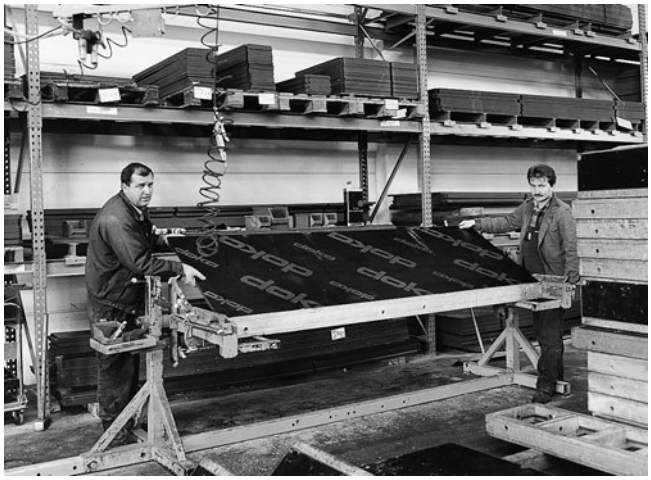
Inspecting, cleaning and maintaining your Doka framed formwork - all jobs which the Doka Reconditioning Service will be pleased to take care of for you. Its highly qualified staff and special equipment will soon get your formwork back in top form, quickly and economically.

The big benefit for you: You always have formwork that is **ready for use**, and also **extend the service life** of your equipment.

What's more: It is only with well-maintained formwork that you will achieve the desired quality of concrete surface.

In our modern plants, your formwork will be **carefully cleaned** using energy-saving and environmentally sound technology.

The panels are then inspected for damage and dimensional accuracy, and overhauled where necessary. Any damaged form-ply is repaired, or - if necessary - replaced.



Doka customer training

Formwork training pays

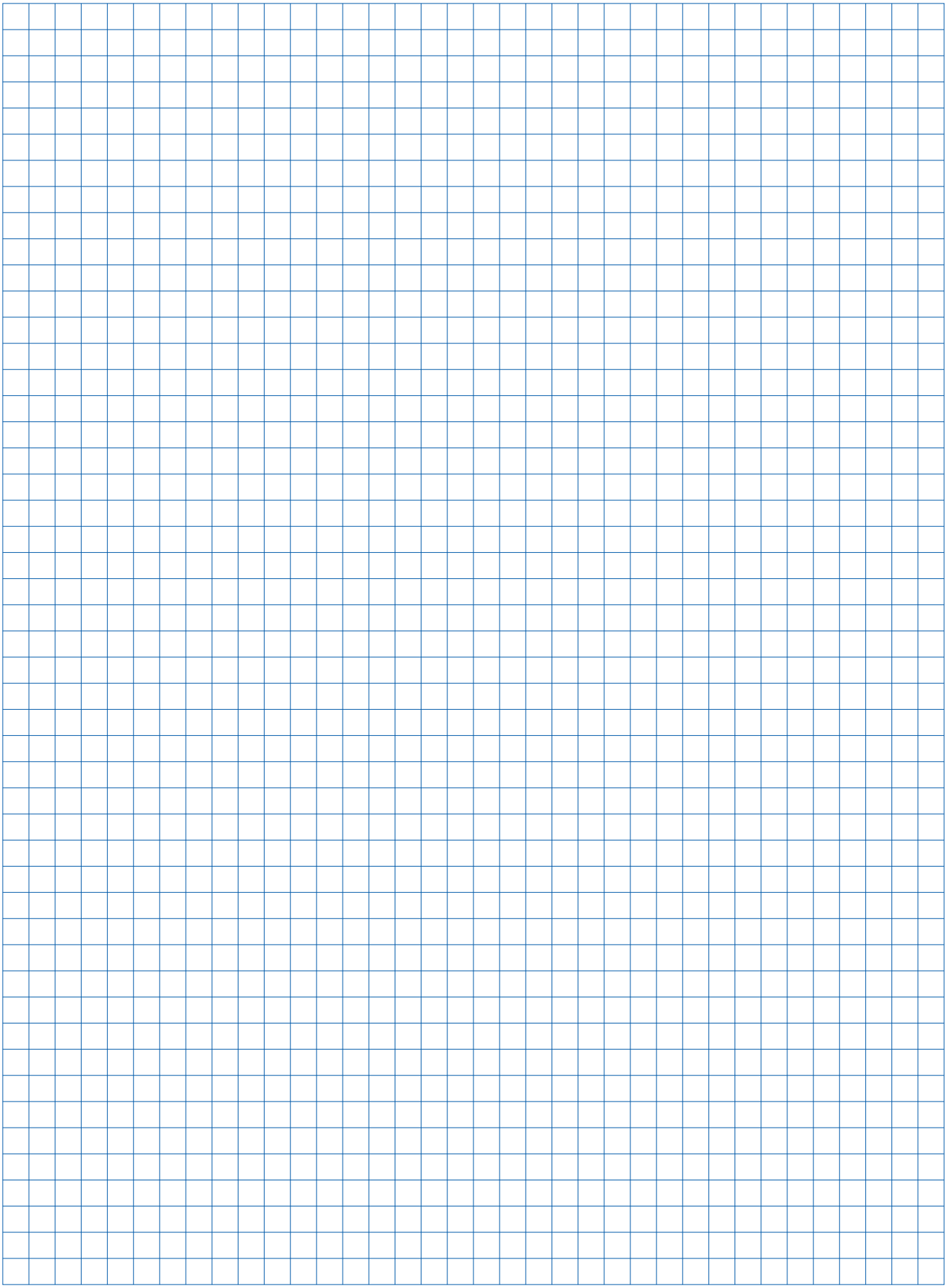
Forming operations account for the lion’s share of labor costs on concrete construction sites. Modern formwork equipment helps to rationalize operations. By improving the overall construction sequence at the same time, however, further very worthwhile gains in efficiency can be achieved.

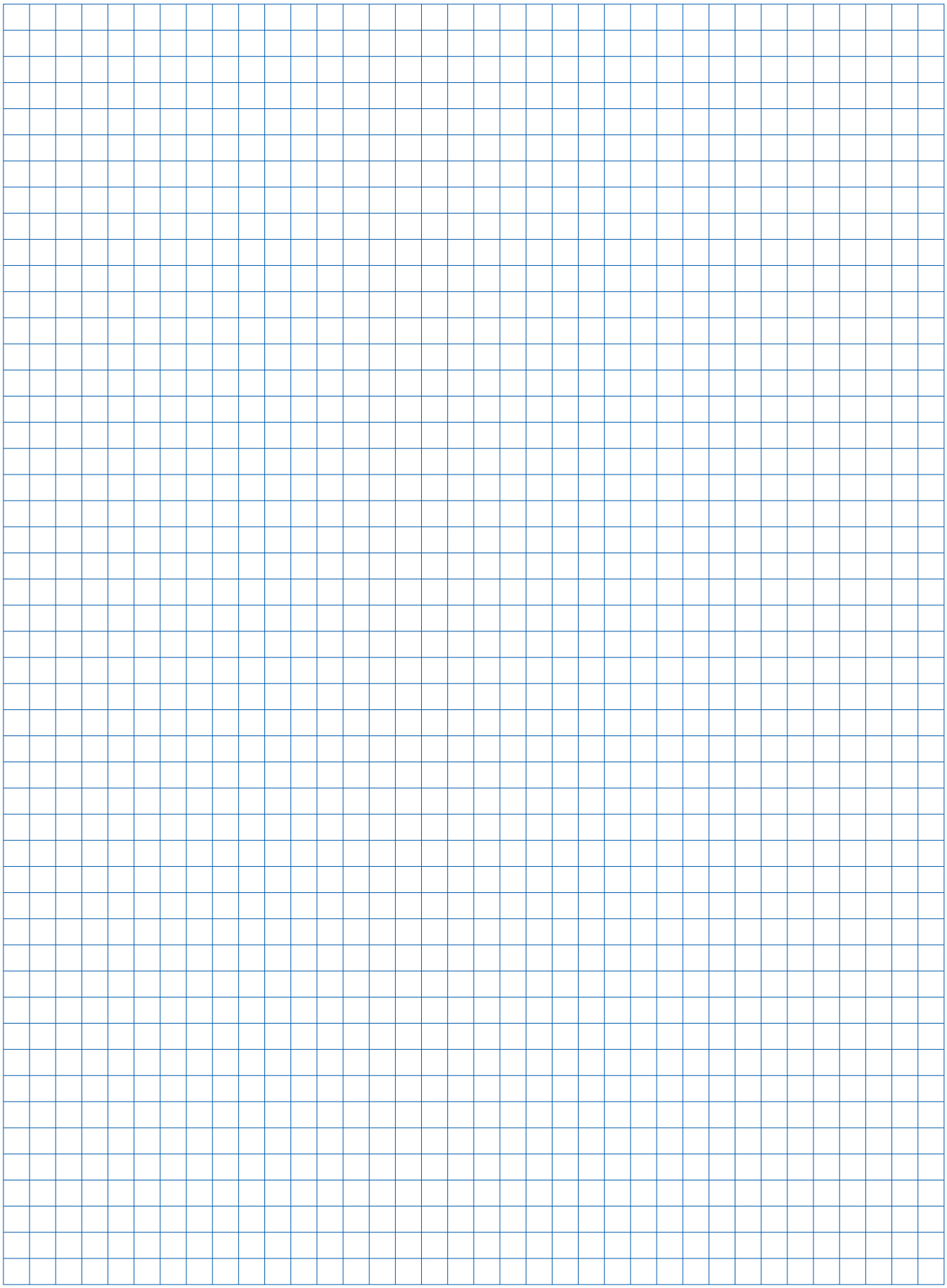
This requires not only better equipment, but also greater skill in making optimum use of this equipment. Doka can help here, with its specialist training program - to help each and every member of the team do his bit towards boosting efficiency and lowering costs.

Doka customer training events also look at the formwork equipment and handling methods that are needed in order to achieve optimum safety - giving your people knowledge and awareness which can only enhance workplace safety on the site.

You’ll find the Doka training program well worth looking into.

The Doka branch in your region will be pleased to tell you more about Doka's various training offerings.

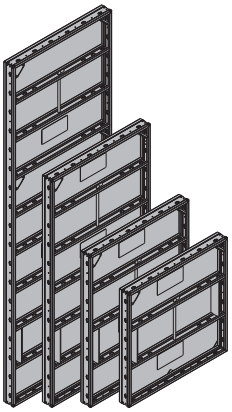




	[lbs]	Article #
Frami S Xlife panel 3'-0"x9'-0"	**181.0**	**588801500**
Frami S Xlife panel 2'-6"x9'-0"	**164.0**	**588802500**
Frami S Xlife panel 2'-0"x9'-0"	**139.0**	**588803500**
Frami S Xlife panel 1'-6"x9'-0"	**117.0**	**588804500**
Frami S Xlife panel 1'-0"x9'-0"	**97.7**	**588805500**
Frami S Xlife panel 6"x9'-0"	**60.6**	**588806500**
Frami S Xlife panel 3'-0"x6'-0"	**118.0**	**588811500**
Frami S Xlife panel 2'-6"x6'-0"	**103.0**	**588812500**
Frami S Xlife panel 2'-0"x6'-0"	**89.3**	**588813500**
Frami S Xlife panel 1'-6"x6'-0"	**75.8**	**588814500**
Frami S Xlife panel 1'-0"x6'-0"	**62.2**	**588815500**
Frami S Xlife panel 6"x6'-0"	**40.1**	**588816500**
Frami S Xlife panel 3'-0"x4'-0"	**89.5**	**588854500**
Frami S Xlife panel 2'-6"x4'-0"	**77.8**	**588855500**
Frami S Xlife panel 2'-0"x4'-0"	**67.0**	**588856500**
Frami S Xlife panel 1'-6"x4'-0"	**52.2**	**588857500**
Frami S Xlife panel 1'-0"x4'-0"	**47.4**	**588858500**
Frami S Xlife panel 6"x4'-0"	**29.1**	**588859500**
Frami S Xlife panel 3'-0"x3'-0"	**65.7**	**588821500**
Frami S Xlife panel 2'-6"x3'-0"	**58.0**	**588822500**
Frami S Xlife panel 2'-0"x3'-0"	**50.5**	**588823500**
Frami S Xlife panel 1'-6"x3'-0"	**42.8**	**588824500**
Frami S Xlife panel 1'-0"x3'-0"	**35.5**	**588825500**
Frami S Xlife panel 6"x3'-0"	**20.7**	**588826500**

Frami S Xlife-Element

Galvanized

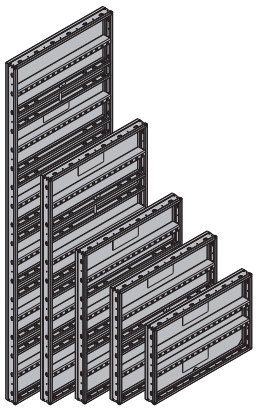


Frami S Xlife universal panel 3'-0"x9'-0"	**229.0**	**588807500**
Frami S Xlife universal panel 3'-0"x6'-0"	**163.0**	**588808500**
Frami S Xlife universal panel 3'-0"x4'-0"	**112.0**	**588860500**
Frami S Xlife universal panel 3'-0"x3'-0"	**84.2**	**588809500**
Frami S Xlife universal panel 3'-0"x2'-0"	**54.7**	**588810500**

Frami S Xlife-Uni-Element

Galvanized

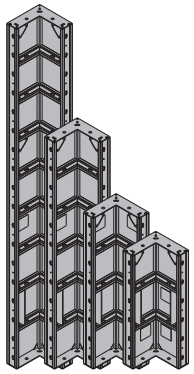
Corners marked in blue



	[lbs]	Article #
Frami S Xlife inside corner 1'-0"x9'-0"	**131.0**	**588817500**
Frami S Xlife inside corner 1'-0"x6'-0"	**89.5**	**588818500**
Frami S Xlife inside corner 1'-0"x4'-0"	**63.3**	**588861500**
Frami S Xlife inside corner 1'-0"x3'-0"	**50.3**	**588819500**

Frami S Xlife-Innenecke

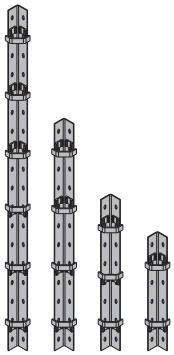
Galvanized



Frami S outside corner 9'-0"	**54.0**	**588827000**
Frami S outside corner 6'-0"	**35.5**	**588828000**
Frami S outside corner 4'-0"	**24.3**	**588862000**
Frami S outside corner 3'-0"	**17.4**	**588829000**

Frami S-Außenecke

Galvanized



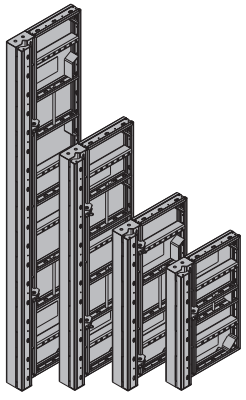
Frami S Xlife pilaster panel 9'-0"	**194.0**	**588838500**
Frami S Xlife pilaster panel 6'-0"	**136.0**	**588839500**
Frami S Xlife pilaster panel 4'-0"	**94.8**	**588865500**
Frami S Xlife pilaster panel 3'-0"	**75.0**	**588840500**

Frami S Xlife-Stützenvorlageelement

Powder-coated, blue

Length: 2' (61 cm)

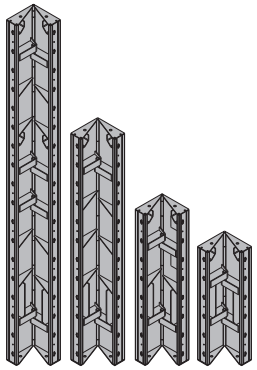
Width: 6" (15 cm)



	[lbs]	Article #
Frami S hinged inside corner l 9'-0"	**157.0**	**588831000**
Frami S hinged inside corner l 6'-0"	**104.0**	**588832000**
Frami S hinged inside corner l 4'-0"	**75.0**	**588863000**
Frami S hinged inside corner l 3'-0"	**60.0**	**588833000**

Frami S-Scharnierecke l

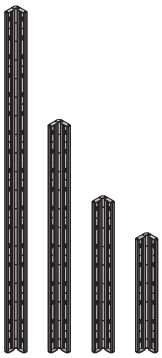
Powder-coated, blue



Frami S hinged outside corner A 9'-0"	**64.4**	**588834000**
Frami S hinged outside corner A 6'-0"	**42.5**	**588835000**
Frami S hinged outside corner A 4'-0"	**28.7**	**588864000**
Frami S hinged outside corner A 3'-0"	**21.6**	**588836000**

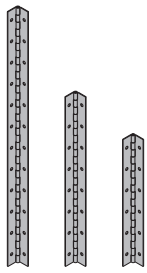
Frami S-Scharnierecke A

Powder-coated, blue



Frami S column hinge 6'-0"	**31.5**	**588881000**
Frami S column hinge 4'-0"	**20.9**	**588882000**
Frami S column hinge 3'-0"	**15.7**	**588883000**

Frami S-Stützengelenk



Hexagon screw DIN 933 M18x50 8.8 galv.	**0.33**	**588879000**

Sechskantschraube DIN 933 M18x50 8.8 verz.

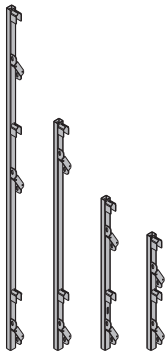
Hexagon nut DIN 934 M18 8 galv.	**0.11**	**588880000**

Sechskantmutter DIN 934 M18 8 verz.

	[lbs]	Article #
Frami S steel filler 2"x9'-0"	**22.5**	**588842000**
Frami S steel filler 1 1/2"x9'-0"	**20.9**	**588843000**
Frami S steel filler 1"x9'-0"	**15.4**	**588844000**
Frami S steel filler 2"x6'-0"	**15.0**	**588845000**
Frami S steel filler 1 1/2"x6'-0"	**13.9**	**588846000**
Frami S steel filler 1"x6'-0"	**9.3**	**588847000**
Frami S steel filler 2"x4'-0"	**11.0**	**588866000**
Frami S steel filler 1 1/2"x4'-0"	**10.4**	**588867000**
Frami S steel filler 1"x4'-0"	**7.5**	**588868000**
Frami S steel filler 2"x3'-0"	**9.7**	**588848000**
Frami S steel filler 1 1/2"x3'-0"	**8.6**	**588849000**
Frami S steel filler 1"x3'-0"	**6.4**	**588850000**

Frami S-Stahlausgleich

Powder-coated, blue



Frami S filler angle 3/4" 3'-0"	**7.3**	**588820000**
Frami S filler angle 3/4" 4'-0"	**10.4**	**588886000**
Frami S filler angle 3/4" 6'-0"	**15.4**	**588885000**
Frami S filler angle 3/4" 9'-0"	**23.6**	**588884000**

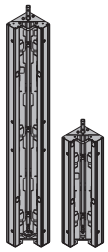
Frami S-Schalhautwinkel

Galvanized

Framax S bias cut corner l 2.70m	**388.0**	**588527000**
Framax S bias cut corner l 1.35m	**207.0**	**588528000**

Framax S Ausschalecke l

Galvanized, powder-coated



Framax stripping spindle l with ratchet	**12.1**	**588653000**

Framax-Ausschalspindel l mit Ratsche

Galvanized

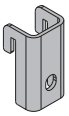
Height: 10" (24,8 cm)

Frami tie-adapter for bias cut corner l	**1.0**	**588492000**

Frami-Ankeradapter für Ausschalecke l

Galvanized

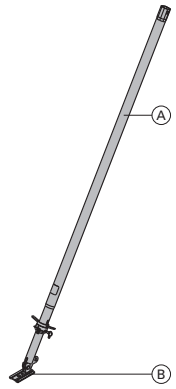
Height: 4 1/2" (11 cm)



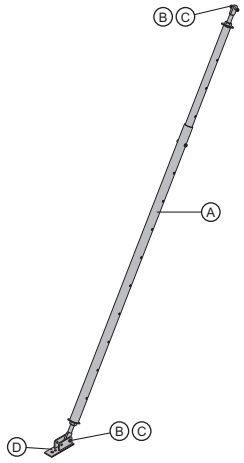
	[lbs]	Article #
Frami profile adapter for bias cut corner I Frami-Profiladapter für Ausschalecke I Galvanized Height: 3 1/4" (8 cm)	1.3	588491000
Framax quick acting clamp RU Framax-Schnellspanner RU Galvanized Length: 8" (20 cm)	7.3	588153400
Frami panel shoe Frami-Elementschuh Galvanized Length: 6 1/2" (16 cm)	2.9	588490000
Frami clamp Frami-Spanner Galvanized Length: 4 1/2" (11 cm)	2.6	588433000
Frami adjustable clamp Frami-Ausgleichsspanner Galvanized Length: 1'-4" (40 cm)	7.9	588436000
Frami universal waling 0.70m **Frami universal waling 1.25m** Frami-Klemmschiene Painted blue	8.2 14.1	588439000 588440000
Framax S universal waling 0.90m **Framax S universal waling 1.50m** Framax S Klemmschiene Painted blue	23.6 39.2	588519000 588520000
Frami wedge clamp Frami-Klemme Galvanized Length: 6 1/2" (16 cm)	2.4	588441000
Frami universal fixing bolt 5-12cm Frami-Universalverbinder 5-12cm Galvanized Length: 9" (23 cm)	0.95	588479000

	[lbs]	Article #
Frami profile connector 5-18cm Frami-Profilverbinder 5-18cm Galvanized Length: 1'-1" (33 cm)	1.8	588493000
Frami lifting hook Frami-Umsetzbügel Galvanized Width: 6" (15 cm) Height: 8" (21 cm) Follow the directions in the "Operating Instructions"!	16.5	588438000
Frami plumbing strut 260 Frami-Justierstütze 260 Galvanized Length: 4'-9" - 8'-6" (145 - 258 cm)	30.6	588437000
Adjusting strut 120 Justierstrebe 120 Galvanized Length: 2'-7" - 4'-3" (80 - 130 cm)	15.9	588248000
Strut shoe for Frami plumbing strut 260 Strebenschuh f. Frami-Justierstütze 260 Galvanized Width: 3 1/4" (8 cm) Height: 5" (13 cm)	1.8	508437030
Strut 340 Stütze 340 consisting of:		
(A) **Plumbing strut 340** Galvanized Length: 6'-3" - 11'-2" (190 - 341 cm)	31.3	588247000
(B) **Prop shoe** Galvanized Length: 8" (20 cm) Width: 4 1/2" (11 cm) Height: 4" (10 cm)	4.6	588245000
Galvanized Delivery condition: separate parts		

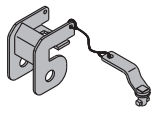
	[lbs]	Article #
Strut 540 Stütze 540 consisting of:		
(A) **Plumbing strut 540** Galvanized Length: 10'-2" - 18'-1" (309 - 550 cm)	**65.3**	**588250000**
(B) **Prop shoe** Galvanized Length: 8" (20 cm) Width: 4 1/2" (11 cm) Height: 4" (10 cm)	**4.6**	**588245000**
Galvanized Delivery condition: separate parts		



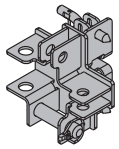
	[lbs]	Article #
Pipe brace 12'-0"-21'-0" Rohrstütze 12'-0"-21'-0" consisting of:		
(A) **Pipe brace 12'-0"-21'-0"**	**160.0**	**585091000**
(B) **Speed bolt 3/4"x4"** 2 pcs.	**0.64**	**585650000**
(C) **Speed nut 3/4"** 2 pcs.	**0.2**	**585652000**
(D) **Pipe brace shoe**	**10.4**	**585088000**
Galvanized Delivery condition: separate parts		



	[lbs]	Article #
Frami strut head Frami-Strebenkopf	**3.1**	**508437002**
Galvanized Width: 3 1/2" (9 cm) Height: 5 1/2" (14 cm)		

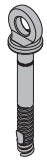


	[lbs]	Article #
Frami S bracing head Frami S-Stützenkopf	**9.7**	**588853000**
Galvanized Width: 7 1/2" (19 cm) Height: 7 1/2" (19 cm)		



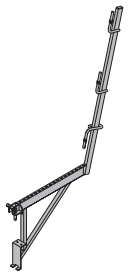
	[lbs]	Article #
Frami S connection profile Frami S-Anschlussprofil	**22.0**	**588852000**
Painted blue Length: 3'-5" (105 cm)		

	[lbs]	Article #
Doka express anchor 16x125mm Doka-Expressanker 16x125mm	**0.68**	**588631000**
Galvanized Length: 7" (18 cm) Follow fitting instructions!		



	[lbs]	Article #
Doka coil 16mm Doka-Coil 16mm	**0.02**	**588633000**
Galvanized Diameter: 5/8" (1,6 cm)		

	[lbs]	Article #
Frami bracket 60 Frami-Konsole 60	**17.0**	**588442000**
Galvanized Length: 3'-3" (98 cm) Height: 5'-2" (157 cm)		



	[lbs]	Article #
Handrail clamp S Schutzgeländerzwinge S	**25.4**	**580470000**
Galvanized Height: 4' - 5'-7" (123 - 171 cm)		

	[lbs]	Article #
Frami S frame hole plug Frami S-Ankerstopfen	**0.007**	**588830000**
Brown Diameter: 1 1/8" (3 cm)		

	[lbs]	Article #
Frami universal panel plug Frami-Abdeckstopfen	**0.007**	**588445000**
Yellow Diameter: 3/4" (2 cm)		

	[lbs]	Article #
Frami anchoring bracket Frami-Ankerhaltewinkel Galvanized	1.3	588453000
Frami S flat tie-rod 4"-32" Frami S-Flachanker 4"-32" Galvanized Length: 3'-2" (96 cm)	4.4	588889000
Frami S top yoke 4"-30" Frami S-Flachanker 4"-30" Galvanized Length: 3'-3" (99 cm)	4.9	588837000
Frami clip Frami-Stecker Galvanized Width: 1 1/8" (3 cm) Height: 4 1/2" (12 cm)	0.57	588434000
Frami bracing clip Frami-Bodenhalter Galvanized Length: 5" (12,7 cm) Width: 2 3/4" (6,7 cm)	1.2	588495000
Frami foundation clamp Frami-Fundamentspanner Galvanized Height: 3 1/2" (9 cm)	3.5	588452000
Doka perforated tape S 2" 25m Doka-Lochband S 2" 25m	37.5	588841000
Doka perforated tape 50x2.0mm 25m Doka-Lochband 50x2,0mm 25m	37.5	588206000
Frami S frontal triangular ledge 9'-0" **Frami S frontal triangular ledge 4'-0"** Frami S-Stirndreikantleiste	3.1 1.3	588887000 588888000

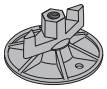
	[lbs]	Article #
Frami S frontal triangular ledge 3/4" 9'-0" **Frami S frontal triangular ledge 3/4" 6'-0"** **Frami S frontal triangular ledge 3/4" 4'-0"** **Frami S frontal triangular ledge 3/4" 3'-0"** **Frami S frontal triangular ledge 3/4" 2'-0"** Frami S-Stirndreikantleiste 3/4"	3.7 2.4 1.7 1.2 0.82	588878000 588877000 588876000 588875000 588874000
Doka 4-part chain 3.20m Doka-Vierstrangkette 3,20m Follow the directions in the "Operating Instructions"!	33.1	588620000
Frami transport hook 2.5kN Frami-Transporthaken 2,5kN Galvanized Length: 7" (17,5 cm) Follow the directions in the "Operating Instructions"!	1.2	588494000
Dokamatic lifting strap 13.00m Dokamatic-Umsetzgurt 13,00m Green Follow the directions in the "Operating Instructions"!	23.1	586231000
Doka multi-trip transport box 1.20x0.80m Doka-Mehrwegcontainer 1,20x0,80m Galvanized Height: 2'-7" (78 cm) Follow the directions in the "Operating Instructions"!	165.0	583011000
Multi-trip transport box partition 0.80m **Multi-trip transport box partition 1.20m** Mehrwegcontainer Unterteilung Timber parts varnished yellow Steel parts galvanized	8.2 12.1	583018000 583017000

Taper tie system 3/4" to 1"

	[lbs]	Article #
Taper tie 3/4" to 1"x32" & 5/8" [15.0] ends	3.7	585820000
Taper tie 3/4" to 1"x38" & 5/8" [15.0] ends	4.9	585821000
Taper tie 3/4" to 1"x44" & 5/8" [15.0] ends	6.0	585822000
Taper tie 3/4" to 1"x52" & 5/8" [15.0] ends	7.1	585823000

Kon. Ankerstab 3/4"-1" & 5/8" [15,0] End.

Super plate 15.0 — 2.0 — 581966000
Superplatte 15,0

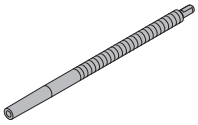


Galvanized
Height: 2 1/4" (6 cm)
Diameter: 4 1/2" (12 cm)
Width-across: 27 mm

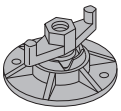
DIN 18216

She-bolt system 7/8"

Frami S she-bolt 7/8"x19" — 3.7 — 588873000
Frami S-Ankerkopf 7/8"x19"



Super plate 20.0 B — 4.4 — 581424000
Superplatte 20,0 B



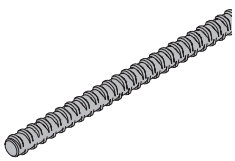
Galvanized
Height: 2 3/4" (7 cm)
Diameter: 5 1/2" (14 cm)
Width-across: 34 mm

DIN 18216

Tie rod system 15.0

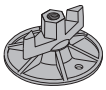
	[lbs]	Article #
Tie rod 15.0mm galvanized 0.50m	1.6	581821000
Tie rod 15.0mm galvanized 0.75m	2.4	581822000
Tie rod 15.0mm galvanized 1.00m	3.1	581823000
Tie rod 15.0mm galvanized 1.25m	4.0	581826000
Tie rod 15.0mm galvanized 1.50m	4.9	581827000
Tie rod 15.0mm galvanized 1.75m	5.5	581828000
Tie rod 15.0mm galvanized 2.00m	6.4	581829000
Tie rod 15.0mm galvanized 2.50m	7.9	581852000
Tie rod 15.0mm galvanized .....m	3.1	581824000
Tie rod 15.0mm non-treated 0.50m	1.6	581870000
Tie rod 15.0mm non-treated 0.75m	2.4	581871000
Tie rod 15.0mm non-treated 1.00m	3.1	581874000
Tie rod 15.0mm non-treated 1.25m	4.0	581886000
Tie rod 15.0mm non-treated 1.50m	4.6	581876000
Tie rod 15.0mm non-treated 1.75m	5.5	581887000
Tie rod 15.0mm non-treated 2.00m	6.4	581875000
Tie rod 15.0mm non-treated 2.50m	7.9	581877000
Tie rod 15.0mm non-treated 3.00m	9.5	581878000
Tie rod 15.0mm non-treated 3.50m	11.0	581888000
Tie rod 15.0mm non-treated 4.00m	12.6	581879000
Tie rod 15.0mm non-treated 5.00m	15.9	581880000
Tie rod 15.0mm non-treated 6.00m	19.0	581881000
Tie rod 15.0mm non-treated 7.50m	23.6	581882000
Tie rod 15.0mm non-treated .....m	3.1	581873000

Ankerstab 15,0mm



DIN 18216

Super plate 15.0 — 2.0 — 581966000
Superplatte 15,0



Galvanized
Height: 2 1/4" (6 cm)
Diameter: 4 1/2" (12 cm)
Width-across: 27 mm

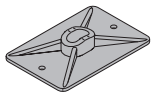
DIN 18216

Wing nut 15.0 — 0.68 — 581961000
Flügelmutter 15,0

Galvanized
Length: 4" (10 cm)
Height: 2" (5 cm)
Width-across: 27 mm

DIN 18216

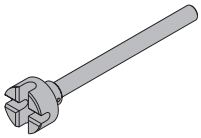
Angle anchor plate 12/18 — 2.9 — 581934000
Winkelplatte 12/18



Galvanized
Special order only!

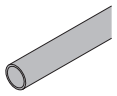
DIN 18216

Tie rod wrench 15.0/20.0 — 4.2 — 580594000
Ankerstabschlüssel 15,0/20,0



Galvanized
Length: 1'-3" (37 cm)
Diameter: 3 1/4" (8 cm)

Plastic tube 22mm 2.50m — 0.99 — 581951000
Kunststoffrohr 22mm 2,50m



Universal cone 22mm — 0.011 — 581995000
Universal-Konus 22mm

Gray
Diameter: 1 5/8" (4 cm)

Plug 22mm — 0.007 — 581953000
Verschlussstopfen 22mm

Gray

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